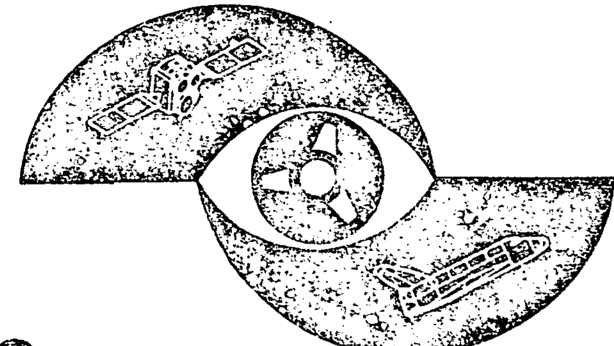
81SDS4232

LANDSAT-D GROUND SEGMENT

OPERATIONS PLAN



SPACE SYSTEMS DIVISION

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81SDS4232
Revision A
16 July 1982

LANDSAT-D GROUND SEGMENT

OPERATIONS PLAN

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REVISION LOG

This log identifies those portions of this document which have been revised since original issue. Revised portions of each page, for the current revision only, are identified by marginal striping.

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FOREWORD

Various sectons of this document make reference to job control language (JCL) as the means for operator initiation of software programs associated with process operations. The JCL is being replaced by an MMF menu-driven, operator-oriented process selection and control structure that is currently under development and partially implemented. Eventually, the menu-driven structure will be the prime operational mode, with JCL used only as backup.

The menu structure is such that the MMF system operator will have access to the complete scope of Ground Segment transactions and processes; however, specific task-oriented and/or process-oriented users wil be presented with process selection menus that are restricted to their assigned areas of responsibility, as determined by their assigned "log-on" account identifications. This structure will maintain system integrity and security, at the same time allowing operating personnel complete selection of automatic or manual execution for their transactions and/or processes of interest.

The scenarios in the main menu accounts incorporate the complete sequence of transactions and processes needed for MMF to schedule and operate the Ground Segment. Subsets of scenarios for specific transactions and processes are provided by predetermined entry points into the main accounts, as determined by the user's account identification.

Appendix A provides a description of the menu concept. Since the system contains over 200 menus at various selection and processing levels, only one

example of operator interaction is given, which is a representative portrayal of typical menu-driven operations.

SECTION 1

INTRODUCTION

1.1 SCOPE

The Ground Segment Operations Plan describes the basic concept for the utilization of Landsat ground processing resources. This document is designed to address only the steady state activities that support normal ground processing. Activities that support the flight operations or special post-launch checkout are not covered by this document. Flight operations support is covered in the Flight Segment Operations Plan, SVS10147. The Ground Segment Operations Plan is designed to cover only the Landsat-D mission. The plan will cover all the processing of the multispectral scanner (MSS) and the processing of thematic mapper (TM) through data acquisition and payload correction data generation.

1.2 PURPOSE

The plan describes the major functional processes associated with the Ground Segment operations. The purpose is to present the capabilities embedded in the hardware and software elements from an operations viewpoint. In addition, this plan will identify the personnel assignments associated with each functional process and the mechanisms available to them to control the overall data flow. This plan assumes that the reader has an understanding of the Landsat-D design as described in the Landsat-D Ground Segment Design Description (GES 10108). Operations personnel should have completed their classroom training before attempting to use this document.

1.3 APPLICABLE DOCUMENTS

a. GES 10045

Landsat-D Ground Segment Specification

b. GES 10062

Landsat-D Ground Segment Specification for the Mission Management Facility - MSS

c. GES 10484

Landsat-D Ground Segment Specification for the Mission Management Facility - Thematic Mapper

d. GES 9838

Landsat-D Ground Segment Specification for the Control and Simulation Facility

e. GES 10027

Landsat-D Ground Segment Specification for the MSS Image Processing System

f. GES 10081

Landsat-D Ground Segment Specification for the TM Image Processing System

g. GES 10028

Landsat-D Ground Segment Specification for the Data Receiving Record and Transmit System

h. SVS 9833

Specification for the Landsat-D Transportable Ground Station

i. SVS 9934

Landsat-D Flight Segment Specification

j. GES 10108

Landsat-D Ground Segment Design Description

1.4 ACRONYMS

AAP	Acquisition Analysis Package
ACE	Attitude Control Electronics
ACK	Acknowledgement
ACS	Attitude Control System
A/D	Analog to Digital
ADP	Automatic Data Processing
ADPE	Automatic Data Processing Equipment
ADS	Angular Displacement Sensor
AFGWC	Air Force Global Weather Central
AG	Archive Generation
AGE	Aerospace Ground Equipment
Ahr	Ampere - hour
AN	Alteration Notice
ANDP	Ancillary Data Calculation Process
ANSI	American National Standards Institute
ANT	Ascending Node Table
AOIPS	Atmospheric and Oceanographic Image Processing System
AOP	Advanced Onboard Processor
AOS	Acquisition of Signal

APM	Assistant Project Manager
APS	Antenna Positioning System
A/R	As Required
ASCII	American Standard Code for Information Interchange
ASR	Automatic Send/Receive
AT	Acceptance Test
ATP	Acceptance Test Plan
ATS	Applications Technology Satellite
AWG	American Wire Gauge
BER	Bit Error Rate
BIL	Band Interleaved by Line
BIP	Band Interleaved by Pixel
BPA	Bus Protection Assembly
bpi	Bits per Inch
BPI	Bytes per Inch
bps	Bits per Second
BPS	Bytes per Second
BSQ	Band Sequential
B/U	Backup
B&W	Black and White
CAL	Calibration
CAP	Closest Approach Point
CAT	Catalog

CC	Cloud Cover
CCA	Cloud Cover Assessment
CCP	Cloud Cover Assessment Process
CCT	Computer Compatible Tape
CCT-A	CCT Containing Partially-Corrected Data
CCT-AT	CCT Containing Partially-Corrected TM Sensor Data
CCT-P	CCT Containing Fully-Corrected Data
CCT-PT	CCT Containing Fully-Corrected TM Sensor Data
C&DH	Communication and Data Handling
CDHSS	Communication and Data Handling System Simulator
CDHSS I/U	CDHSS Interface Unit
CI	Configuration Item
CM	Center of Mass
C.M.	Configuration Management
CMD	Command
CMO	Configuration Management Office
COBOL	Common Business Oriented Language
COIL	CSF Operator Interface Language
COMP	Computer
CP	Control Point
CPC	Control Point Chip
CPD	Control Point Directory
CPDS	Computer Program Design Specification
CPL	Control Point Library

SIM	Simulator
SOP	Standard Operating Procedure
SPDI	Serial-to-Parallel Data Input Device
SS	Seconds
S/S	Subsystem
SSP	Scheduling Support Package
STCG	Synchronized Time Code Generator
STD	Standard
STDN	Spaceflight Tracking and Data Network
STR	Standard Tape Recorder
SU	Switching Unit
SVS	Space Vehicle Specification
S/W	Software
TAC	Telemetry and Command
TAG	TM Archival Product Generation
TAS	Tape Archival Storage Area
TBA	To Be Announced
TBD	To Be Determined
TBD	To Be Defined
TBR	To Be Resolved
TBS	To Be Specified
TBS	To Be Supplied
T/C	Time Code

TCC	Time Code Controller
TCG	Time Code Generator
TCU	Time Code Unit
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System
T&E	Test and Evaluation
TGS	Transportable Ground Station
TIPS	Thematic Mapper Image Processing System
TLM	Telemetry
TM	Thematic Mapper
TOPSAS	TDRS Operations Planning Scheduling Aids System
TSIM	Test and Simulation Subsystem
TU45	800/1600 bpi Magnetic Tape Unit
TU72	6250 bpi Magnetic Tape Unit
TU78	6250 bpi Magnetic Tape Unit
TV	Television
TX	Transmit
UBA	Unibus Adaptor
U/L	Uplink
UNIBUS	Universal Bus
USGS	United States Geological Survey
UT	Universal Time
VAX-11/780	Virtual Address Extension DEC Model Computer 11/780

VF	Valley Forge
VFSC	Valley Forge Space Center
VHF	Very High Frequency
VMS	Virtual Memory Operating System
VT78	Intelligent CRT Terminal
VT100	Non-Intelligent CRT Terminal
VTR	Video Tape Recorder
W/B	Wideband
WBVTR	Wide Band Video Tape Recorder
WRS	World Reference System
WS	White Sands
XMIT	Transmit
XMTR	Transmitter
Z	Zulu Time (GMT)
u	Micro-
m	Micrometer (10^{-6} Meter)
P	Microprocessor
S	Microsecond

1.5 DEFINITIONS OF TERMS

TBD

cpm	Cards Per Minute
CPS	Command Processing Subsystem
CPU	Central Processing Unit
CRT	Cathode Ray Tube
CSA	Cropping, Subsampling and Averaging
CSF	Control and Simulation Facility
D/A	Digital-to-Analog
DAS	Data Base Administration Subsystem
DBMS	Data Base Management System
DBMS-20	DEC-20 System Software for Data Base Management
DCL	Digital Command Language
DDD	Days
DEC	Digital Equipment Corporation
DEC-20	DEC-20 Computer
DECnet	Digital Equipment Corporation Communications Network
DECOM	Decommutation Hardware Device
DEMUX	Demultiplexer
DICOMED	Film Recorder
DICOMED	Film Recorder Vendor
DIPS	Digital Image Processing System
D/L	Downlink
DMA	Direct Memory Access
DMF	Data Management Facility

DMS	Data Management System
DOMSAT	Domestic Communications Satellite
DPS	Data Processing System
DR11C	Programmed Input Output Interface Device for DEC Unibus
DR70	Direct Memory Access Interface Device for DEC Massbus
DR780	Direct Memory Access Interface Device for DEC VAX-11/780
DRRTS	Data Receive, Record and Transmit Subsystem
DSM	Downlink Synchronization Module
DX20	DEC Peripheral Interface Device
EBR	Electron Beam Recorder
EBRIC	Electronic Beam Recorder Image Correction
ECC	Error Correction Capability (HDDR)
EDC	EROS Data Center
EDP	Electronic Data (Digital) Processing
EI	Engineering Instruction
ELM	Elevation at Maximum
EOP	End of Process
EOT	End of Tape
EPHEM	Ephemeris
EROS	Earth Resources Observation System
ERT	Ephemeris Represetantion Tape
ESR	Equipment Service Report

FGS	Foreign Ground Station
FHST	Fixed-Head Star Tracker
FIFO	First-In, First-Out
FMS	Flight Segment Management Subsystem
FORTRAN	Formula Translation
FOV	Field-of-View
FPP	Floating Point Processor
FRD	Facilities Requirement Document
FS	Flight Segment
FSCM	Federal Supply Code for Manufacturers
FSS	Flight Scheduling Subsystem
GCM	Geometric Correction Matrix
GCMR	Ground Control Message Request
GCO	Geometric Correction Operator
GCP	Ground Control Point
GDHS	Ground Data Handling System
GE	General Electric
GECP	Geometric Correction Process
GEOREF	Geographic Reference
GES	Ground Electronic Specification
GFE	Government Furnished Equipment
GFIT	Goddard Film Inventory Tape
GFP	Government Furnished Property

GHIT	Goddard HDT Inventory Tape
GHz	Gigahertz (10^9)
GMP	Geometric Correction Matrix Calculation Process
GMS	Ground Segment Management Subsystem
GMT	Greenwich Mean Time
GPS	Global Positioning System
GS	Ground Segment
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
GSTDN	Ground Spaceflight Tracking and Data Network
HAAT	Header, Ancillary, Annotation, Trailer
HDDR	High Density Digital Recorder
HDDT	High Density Digital Tape
HDT	High Density Tape
HDT-A	HDT-Archive Format (Partially corrected)
HDT-AM	HDT-A for MSS Sensor Data
HDT-AT	HDT-A for TM Sensor Data
HDT-P	HDT-Product Format (Fully corrected)
HDT-PT	HDT-P for TM Sensor Data
HDTR	High Density Tape Recorder
HDT-R	HDT-Raw Data
HDT-RM	HDT-R for MSS Sensor Data
HDT-RT	HDT-R for TM Sensor Data

H/W	Hardware
Hz	Hertz (cycles per second)
IAC	Image Analyzer Console
IAT	Image Analysis Terminal
ICD	Interface Control Document
ICS	Image Correction Support Software
ID	Identification
IDS	Image Data System
I/F	Interface
IFOV	Instantaneous Field-of-View
IGF	Image Generation Facility
IIS (I^2S)	International Imaging Systems
IM	Instrument Module
I/O	Input/Output
IPF	Image Processing Facility
ips	Inches per Second
IPS	Image Processing Subsystem
IQL	Interactive Query Language
IR	Infrared
IRG	Inter-Record Gap
IRIG	Inter-Range Instrumentation Group Time Code
IRIG-A	IRIG Time Code Series A
ISS	IGF Software Subset

IT	Integration Test
I&T	Integration and Test
IU	Interface Unit
K	A Thousand
K	1024 (Memory Usage Only)
Kb	Kilobit
KB	Kilobyte
Kbps	Kilobits per Second
KBPS	Kilobytes per Second
KCRT	Keyboard Cathode Ray Tube
KW	Kilowords
L	Local Time
LA36	DEC Hardcopy Terminal
LANDSAT	Land Satellite
LAS	Landsat-D Assessment System
LAT	Latitude
LBP	Library Build Process
LBR	Laser Beam Recorder
LONG	Longitude
LOS	Loss of Signal
LPM	Lines per Minute
LPO	Landsat Project Office
LSB	Least Significant Bit

LSD	Landsat-D
LTTS	Long-Term Tape Storage Facility
M	Mega-
M	Million
MAG	MSS Archival Product Generation
MASSBUS	High Speed for DEC Equipment
Mb	Megabit
MB	Megabyte
MBA	MASSBUS Adaptor
MCC	Mission Control Center
MCCA	Manual Cloud Cover Assessment Package
MF	Minor Frame
MF	Major Frame
MHz	Megahertz (10^6)
MIPS	MSS Image Processing System
mm	Millimeter
MM	Minutes
MMF	Mission Management Facility
MMS	Mission Management Subsystem
MMS	Multi-Mission Modular Spacecraft
M&O	Maintenance and Operations
MODEM	Modulator/Demodulator
MOM	Mission Operations Manager

MPS	Mission Planning System
MSB	Most Significant Bit
MSEC	Millisecond
MSS	Multi Spectral Scanner
MSW	Matrix Switch
MTTR	Mean Time to Repair
MTU	Magnetic Tape Unit
MUX	Multiplexer
MW	Megawords
N/A	Not Applicable
NAK	Negative Acknowledgement
NASA	National Aeronautics and Space Administration
NASCOM	NASA Communications Network
NBTR	Narrow Band Tape Recorder
NCC	Network Control Center
NCCS	Network Control Center Subsystem
NDS	Navigational Development Satellite
NOAA	National Oceanic and Atmospheric Administration
NOCC	Network Operations Control Center
NOSS	National Oceanographic Satellite System
NRZ	Non-Return to Zero
NRZI	Non-Return to Zero Incrementing
NRZ-L	Non-Return to Zero-Level

OAS	Orbit Adjust Subsystem
OBC	Onboard Computer
OBP	Onboard Processor
OCC	Operations Control Center
OCG	Orbit Computations Group
OCR	Optical Character Reader
ODF	Orbit Determination Facility
O&M	Operations and Maintenance
OFLS	Offline System
OLS	Obtain Link Support
ONLS	Online System
OPS	Operations
O/S	Operations Supervisor
PARAM	Parameter
PATH	Orbital path
P/B	Playback
PBM	Pass Briefing Message
PCD	Payload Correction Data
PCM	Pulse Code Modulated
PCP	Payload Correction Processing
PCS	Payload Correction Subsystem
PCU	Power Control Unit
PDR	Problem/Defect Report

PE	Performance Evaluation
PET	Predicted Ephemeris Tape
PFET	Predicted Fit Ephemeris Tape
PGM	Program Manager
PI	Principal Investigator
PIL	Pixel Interleaved by Line
PIXEL	Picture Element
PKG	Package Design Specification
P/L	Payload
PM	Preventive Maintenance
POCC	Payload Operations Control Center
PPL	Photo Processing Lab
PPS	Photographic Processing Subsystem
PROM	Programmable Read-Only Memory
PSDO	Parallel-to-Serial Data Output Device
PSF	Photo/Shipping Support Facility
PSU	Power Switching Unit
QA	Quality Assurance
QAF	Quality Assurance Film
QAFG	Quality Assurance Film Generation
QAP	Quality Assurance Procedure
QC	Quality Control
QLM	Quick-Look Monitor Unit

RAM	Random Access Memory
RC	Radiometric Correction
RCV	Receive
RDT	Raw Data Tape
REC	Record
RF	Radio Frequency
RH780	Massbus Adaptor for DEC VAX-11/780
ROM	Read-Only Memory
ROW	WRS Geographic Frame Reference
RP06	DEC 176 MB Disk or Removable Disk Storage Unit
RP07	DEC 283 MB Disk
R&QA	Reliability and Quality Assurance
RSS	Request Support Subsystem
RSX-11M	Multi-Tasking Operating System Software
R/T	Real-Time
SA	Solar Array
SBI	Synchronous Backplane Interconnect
S/C	Spacecraft
SCAMA	Switching, Conferencing and Monitoring Arrangement
SCI	Serial Control Interface
SCN	Specification Change Notice
SCPT	Station Contacts Processing Tape (Pass Prediction Tape)
SHP	Shipping

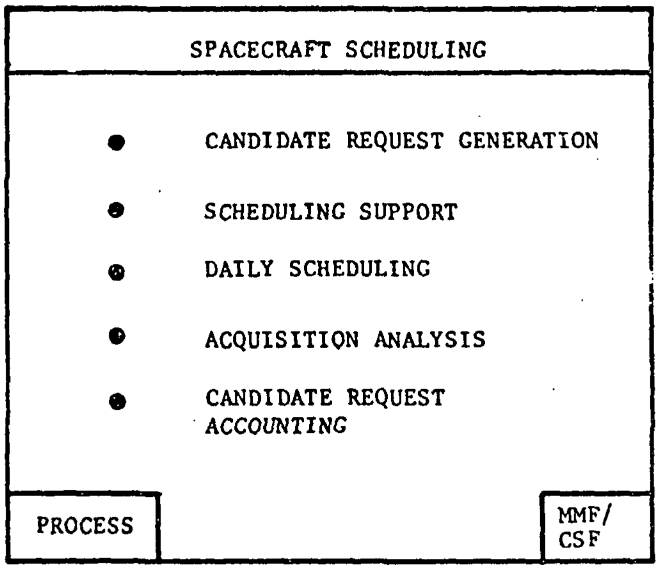

Figure 3-2, Spacecraft Scheduling

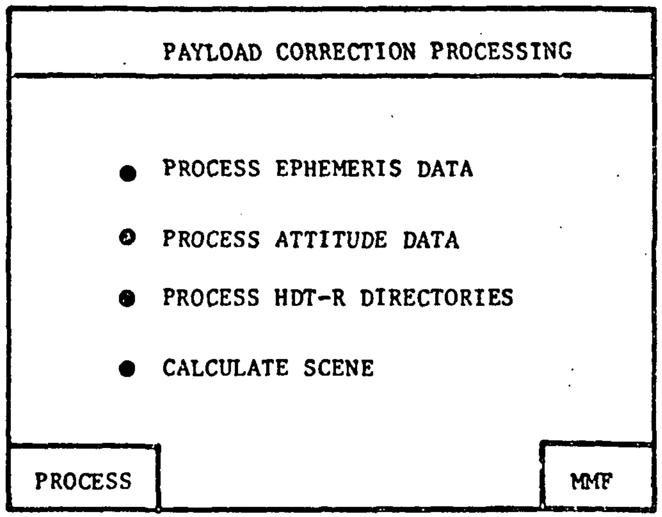

Figure 3-3. Payload Correction Processing

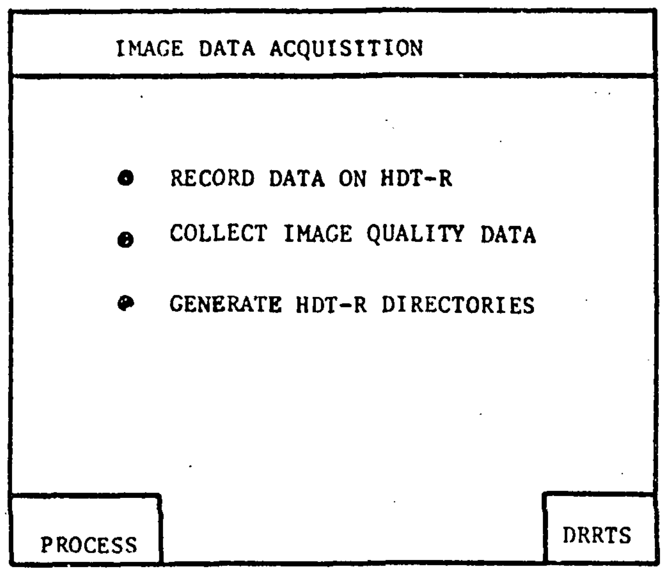

Figure 3-4. Image Data Acquisition

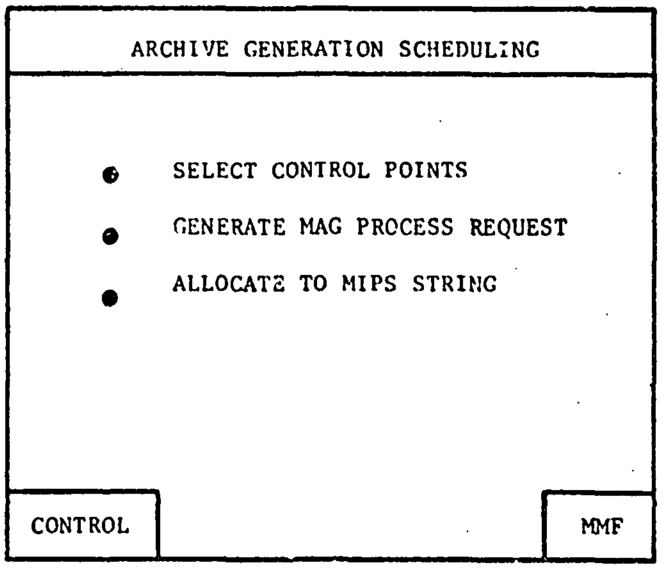

Figure 3-5. Archive Scheduling

SECTION 2

SYSTEM OVERVIEW DESCRIPTION

Landsat-D is divided into a Flight Segment and a Ground Segment. A brief overview of these two segments is provided in this section.

2.1 FLIGHT SEGMENT

The Landsat-D Flight Segment (Figure 2-1) is comprised of the Multi-Mission Spacecraft (MMS) and the Instrument Module (IM). The prime interface with its Ground Segment will be through NASA Communications Network (Nascom).

The MMS contains the following subsystems:

a. Modular attitude control system

b. Modular power subsystem

c. Communication and data handling module

d. MMS electrical subsystem

e. MMS mechanical subsystem

f. MMS thermal subsystem

g. MMS propulsion subsystem.

The IM contains the following subsystems:

a. Wideband comm ations subsystem

b. S-band subsystem

c. C&DH antenna subsystem

d. Global positioning subsystem

e. Solar array assembly

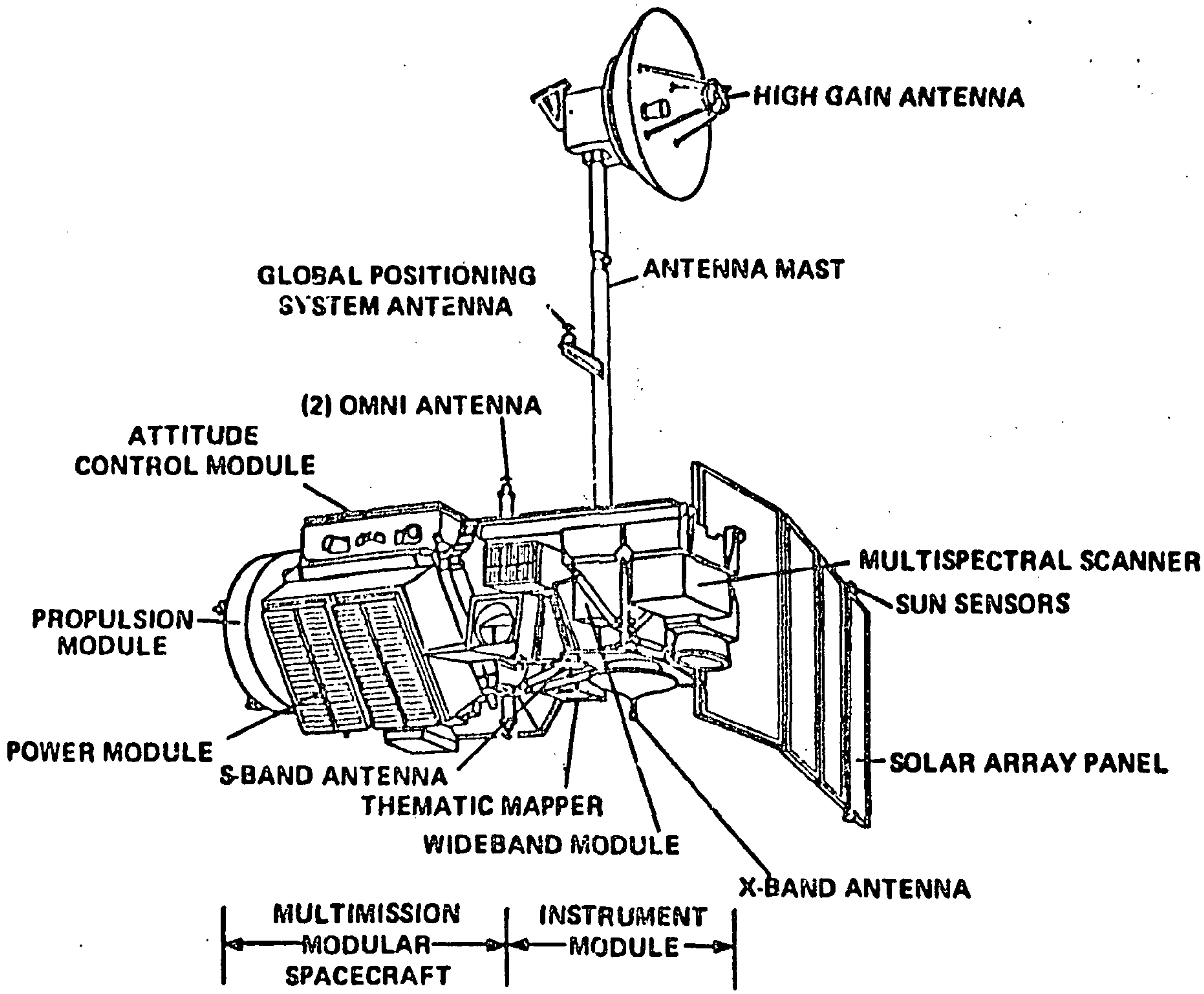

Figure 2-1. Landsat-D Flight Segment

f. IM electrical subsystem

g. IM mechanical subsystem

h. IM thermal subsystem

i. Thematic mapper

j. Multispectral scanner.

2.2 GROUND SEGMENT

The Ground Segment (Figure 2-2) is comprised of the following computer complexes:

a. Control and Simulation Facility (CSF)

b. Mission Management Facility (MMF)

c. Image Generation Facility (IGF)

d. Transportable Ground Station (TGS).

Each of these computer complexes is assigned specific functional responsibilities which will be described in detail in latter sections. A brief introductory description of these elements is contained in this paragraph.

The CSF is primarily responsible for monitoring and controlling the spacecraft which is described in the Flight Segment Operations Plan. In addition, the CSF is responsible for planning and scheduling data acquisition which will be described in more detail in Section 6.

The MMF is responsible for overall control of the Ground Segment. The MMF acts as the focal point for user requests processing and data production management. It also supports management reporting, inventory control activities and data base management.

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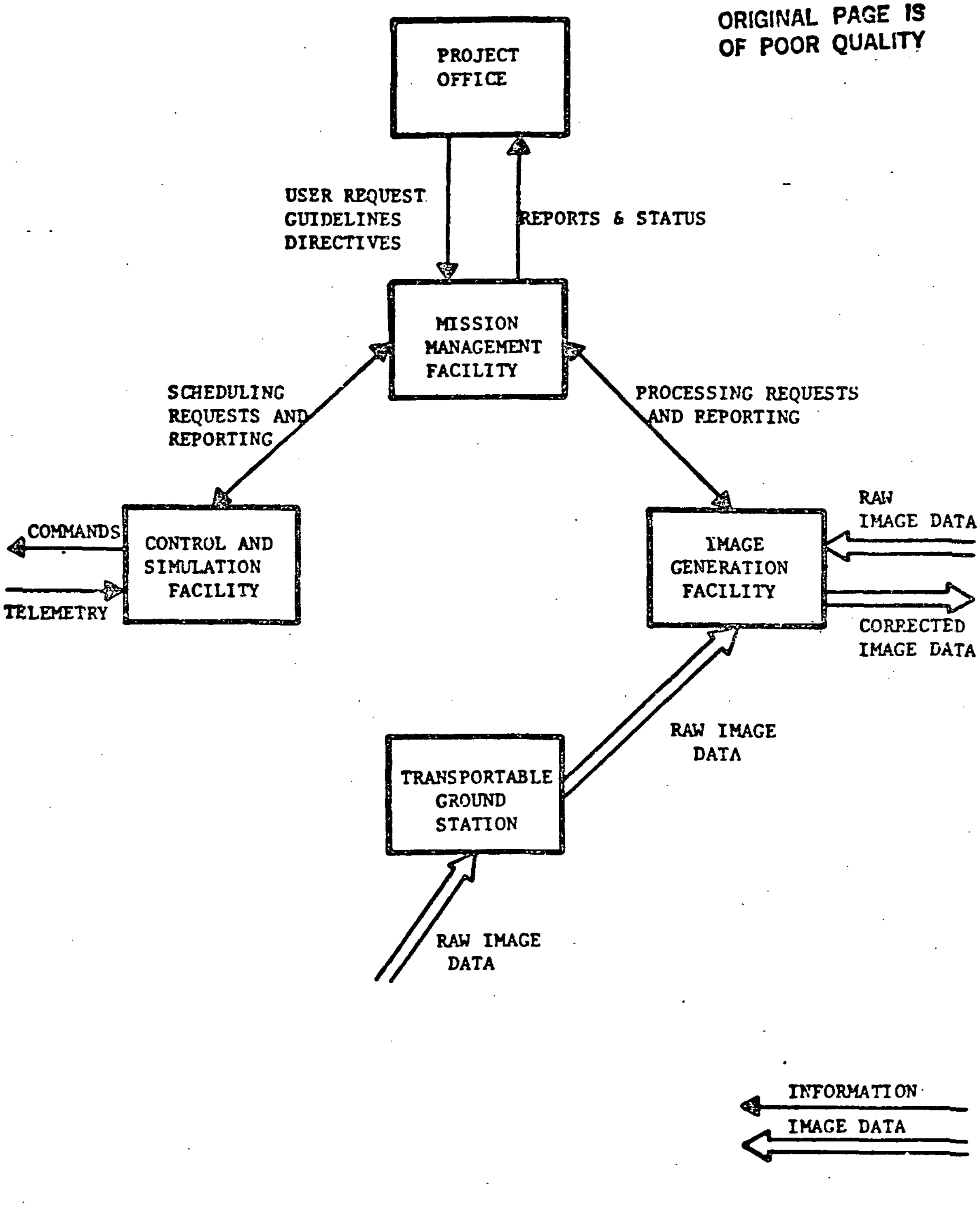


Figure 2-2. Ground Segment Overview

User request processing generates and maintains a complete list of authorized users of Landsat-D and their requirements for acquisitions and products.

The data production management consists of the packaging and control of work orders in the system. These work orders are scheduled by the MMF for the CSF and IGF.

The MMF data base provides historical information on a variety of production activities which is available to management in a report form. This management reporting capability covers the status of all the processing systems in the Ground Segment.

The MMF is also responsible for maintaining the inventory control system for the Ground Segment. This includes the tracking of dispersements and the replenishment of consumables and spare parts used by the Ground Segment.

The IGF is a collection of three separate and unique systems. These three systems are:

a. Data Receive, Record and Transmit System

b. MSS Image Processing System

c. TM Image Processing System.

The Data Receive, Record and Transmit System (DRRTS) performs the following functions: image data acquisition, image data transmission and high density tape copy. It also supports the CSF quick look monitor interface.

The DRRTS acquires TM and MSS image data electronically from the Transportable Ground Station (TGS). The DRRTS also receives data on 14-track tape from GSTDN (Goldstone and Alaska) via the Domsat Interface Facility (DIF) in GSFC, Building 23.

Foreign station tapes will be processed by the DIF and then forwarded to DRRTS.

DRRTS transmits HDT-AM to the EROS Data Center (EDC) via Domsat. In the event of a failure in the Domsat transmission link DRRTS can produce 14-track tapes, which are compatible with EDC. These 14-track tapes are then shipped to EDC.

The MSS Image Processing System (MIPS) performs the following functions: MSS archive generation, MSS performance evaluation and MSS control point library build.

MSS archive generation consists of producing a 28-track HDT containing radiometrically corrected image data, performing manual cloud cover assessment, and generating 70mm quality assurance film.

MSS performance evaluation product generation consists of the following: generating archival tape reports, scene displays, producing computer compatible tapes and 241mm latent film of individual scenes for quality analysis.

The MIPS will extract suitable control points from existing archival data for use in the generation of geometric correction matrices. The control points will be used for subsequent archive generation activities.

The TIPS is used in the MSS processing for the generation of 241mm latent film. This function is done in support of MSS performance evaluation and is not a user product.

The Transportable Ground Station (TGS) receives the image data from the Landsat-D satellite. This data is transferred directly to DRRTS for recording on a high density tape.

SECTION 3

OPERATIONAL SCENARIO

3.1 STANDARD OPERATIONS

The overall operational goal is to effectively blend automated and manual means of scheduling, processing, tracking and verifying the Ground Segment operations. The various inputs will be collected as they become available to the Ground Segment. This is an asynchronous and unpredictable process based upon external interfaces and spacecraft characteristics. When correct inputs are available, processing can be scheduled. The goal is to size the processing packages to facilitate current mission objectives and to optimize available resources. The tracking of products allows priority work to be expedited and controlled. Tracking is also an input into the daily planning and accounting functions. By carefully verifying the acceptability of products after each major step, the percentage of errors that get propagated in subsequent steps is limited and system time spent on rework is minimized.

The quality assurance function monitors the products as well as the processes that generate the products. The quality assurance function is spread among all the various operational personnel in the Ground Segment. Certain specific responsibility will lie within the Quality Assurance Section itself. With an integrated approach to quality assurance, all operational personnel will actively participate in ensuring that the products meet required standards.

This integrated approach is required to minimize the impact of rework on the system. The rework of an excessive number of scenes could severely overload the

system. The criterion for the number of times a scene may be reworked will be determined by the Project Office.

Once the processing begins, quality indicators are displayed by the system which are used to evaluate the processing. As time permits, output will be sampled to increase the confidence in the products, and performance evaluation products will be generated. Output will be sampled after shipment if inspection cannot occur prior to shipment.

After data/film inspection, any scenes that require a change in their assessed archival product quality will have an update run to the data base. These unacceptable scenes will not appear on the GHIT and can be reworked or cancelled. If a scene is determined to be unacceptable, but has been shipped, the scene may be reworked and a new archival product generated to replace the original.

The Ground Segment operation can be divided into eighteen major functions. These functions are:

a. User Request Processing (Figure 3-1)

b. Spacecraft Scheduling (Figure 3-2)

c. Payload Correction Processing (Figure 3-3)

d. Image Data Acquisition (Figure 3-4)

e. Archive Scheduling (Figure 3-5)

f. Archive Generation (Figure 3-6)

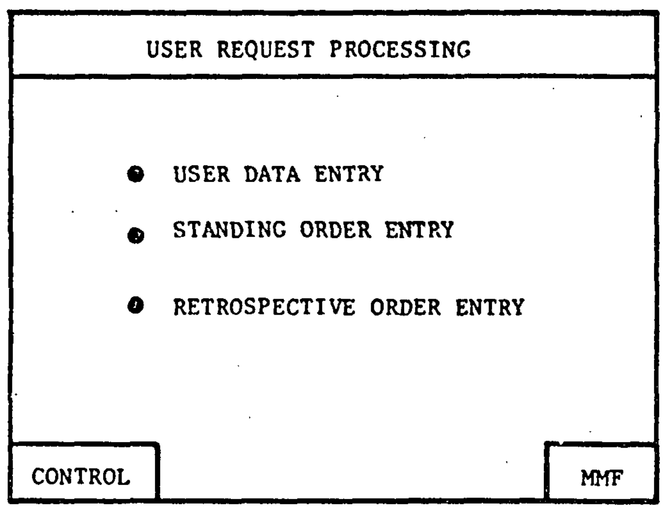


Figure 3-1. User Request Processing

INVENTORY CONTROL PROCESSING

- MAINTAIN CONSUMABLES AND SPARE PARTS
- DISPERSE AND REPLENISH SUPPLIES

Figure 3-15. Inventory Control Processing

PDR/ESR PROCESSING
• TRACK PROBLEMS WITH PRODUCTS AND THE PROCESSING SYSTEMS

Figure 3-16. PDR/ESR Processing

DATA BASE MAINTENANCE

- MAINTAIN THE INTEGRITY OF THE DATA BASE USING
  - JOURNALLING
  - SAVES
  - ROLL OFFS
  - EDITS

Figure 3-17. Data Base Maintenance

The remaining six functions can be classified as support operations. These functions cover a wide spectrum of activities that include:

a. Control Point Library Generation

b. Image Evaluation

c. Inventory Control

d. PDR and ESR Processing

e. Data Base Maintenance

f. Product Tracking.

The eighteen major functions have different roles in support of Ground Segment operations. These roles are determined in part by complex inter-relationships between these functions and external interfaces. The following is an overview of the relative priorities of each function:

User Request Processing

This MMF function will be executed on a daily basis as needed. Normally it will be given a low priority and run on the second shift. Any impending acquisition requests will be fed into the CSF using the dynamic scheduling capability.

Spacecraft Scheduling

This function has two major processes, planning and scheduling. These processes have high priority in the MMF in order to have inputs available for CSF by mid-morning.

PCS Processing

This MMF function has high priority for both of the steps. The Phase 1

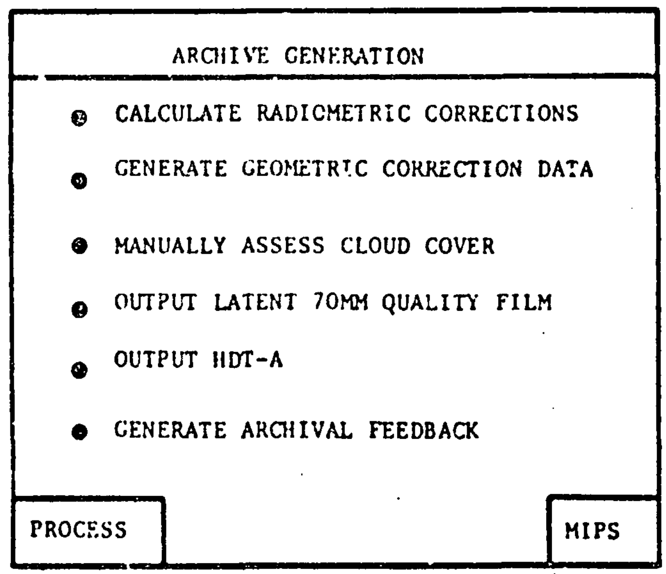


Figure 3-6. Archive Generation

g. Archive Completion (Figure 3-7)

h. Performance Evaluation Product Scheduling (Figure 3-8)

i. Performance Evaluation Product Generation (Figure 3-9)

j. Performance Evaluation Production Completion (Figure 3-10)

k. Archive Dissemination (Figure 3-11)

l. Copy/Uplink Processing (Figure 3-12)

m. Control Point Library Generation (Figure 3-13)

n. Image System Evaluation (Figure 3-14)

o. Inventory Control Processing (Figure 3-15)

p. Problem Defect and Equipment Service Reporting (Figure 3-16)

q. Data Base Maintenance (Figure 3-17)

r. Product Tracking.

This plan will divide these eighteen into two categories. The first twelve functions cover the standard archival data flow. This will begin with entry of user requests for acquisition and products and ends with the uplink to EDC of the archival data via Domsat. Each of these will be considered as a process operation or a control operation.

A control operation is primarily responsible for regulating a process operation. It collects the information necessary to control the data processing operation.

A process operation actually performs the data manipulation, transformation or product generation.

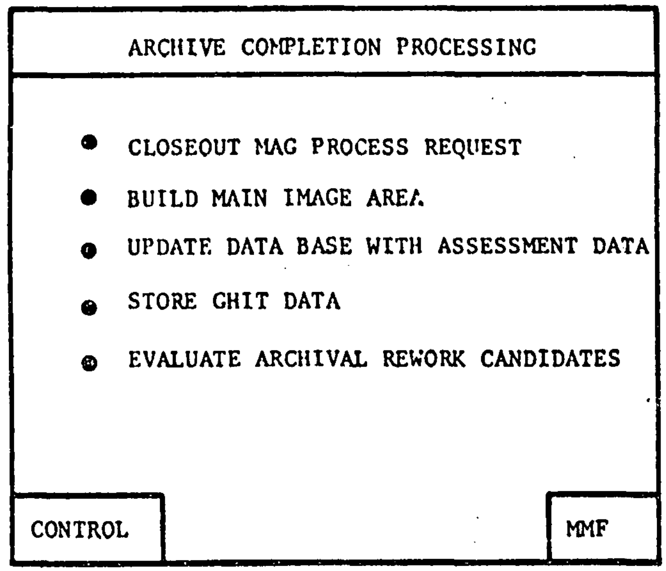


Figure 3-7, Archive Completion

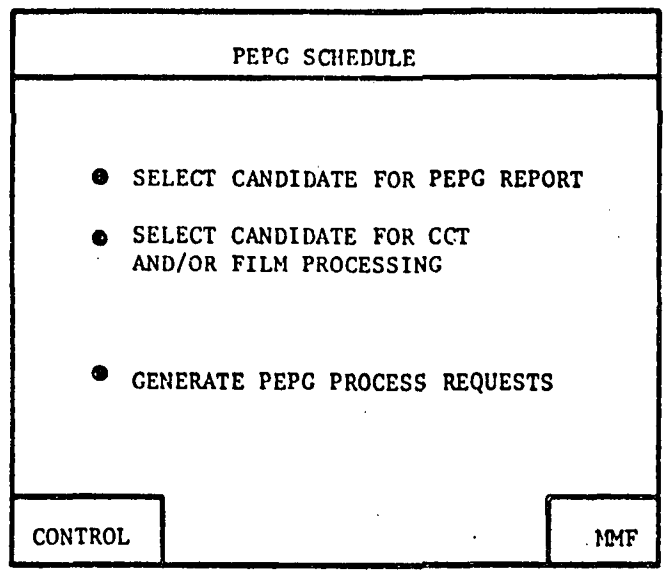


Figure 3-8. Performance Evaluation Product Scheduling

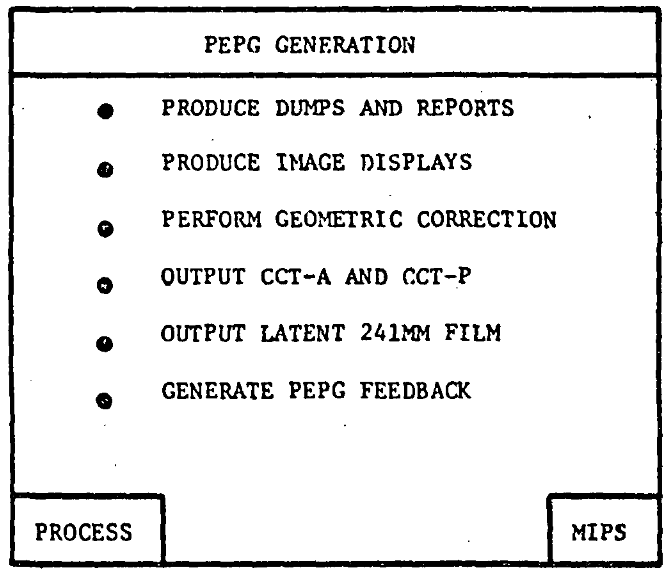


Figure 3-9. Performance Evaluation Product Generation

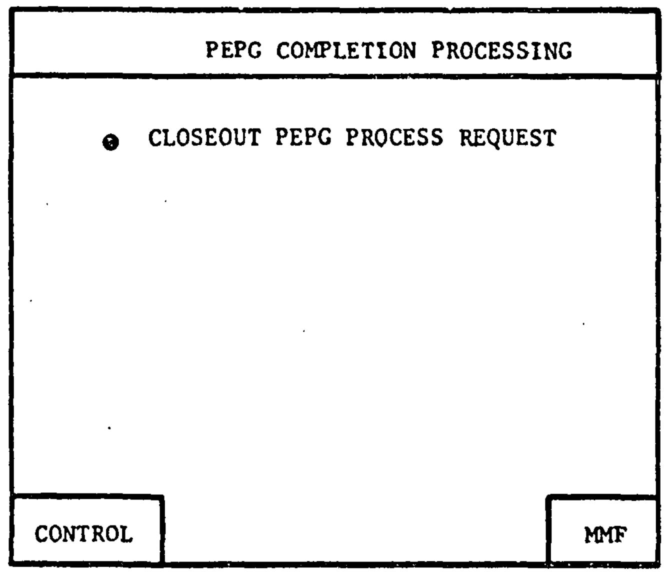


Figure 3-10. Performance Evaluation Production Completion

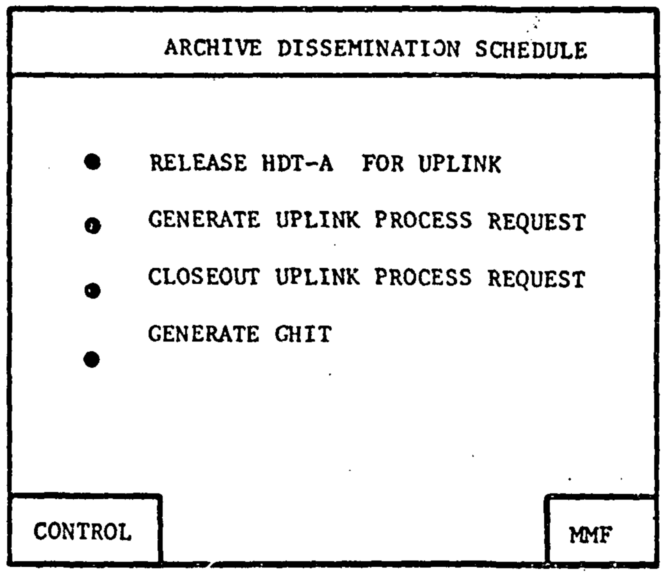


Figure 3-11. Archive Dissemination

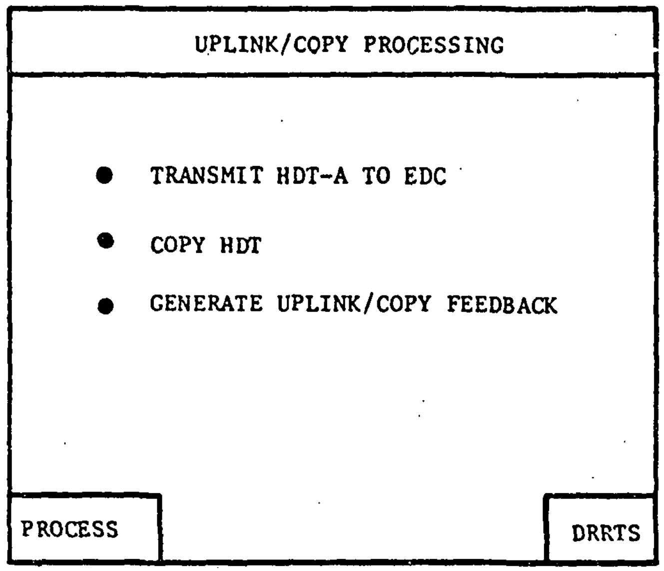


Figure 3-12. Copy/Uplink Processing

CONTROL POINT LIBRARY GENERATION

- DIGITIZE MAP POINTS
- GENERATE CONTROL POINT PROCESS REQUESTS
- SELECT CONTROL POINTS
- ANALYZE FAILED CONTROL POINTS

Figure 3-13. Control Point Library Generation

IMAGE SYSTEM EVALUATION

- MONITOR RADIOMETRIC PERFORMANCE
- MONITOR GEOMETRIC PERFORMANCE
- MONITOR IMAGE QUALITY

Figure 3-14. Image System Evaluation

"PAGE MISSING FROM AVAILABLE VERSION"

morning. The processing of new telemetry and enhemeris files from the CSF will occur on a 90-minute cycle, and an attempt will be made to stay current throughout the entire day. New HDT-R directories will start to be available from DRRTS by mid-morning and they will be processed so that they may be used to replenish the archive generation queues before noon.

The first archive generation feedback from MIPS will become available around noon. This data will be processed and prepared for PEPG dumps on the new HDT-A tapes.

Several tasks will not be scheduled for the morning in MMF due to higher priority activities. These tasks will typically be run in the afternoon and on the second shift. These activities are:

a. PEPG Completion Processing

b. Archive Dissemination

c. Control Point Library Activities

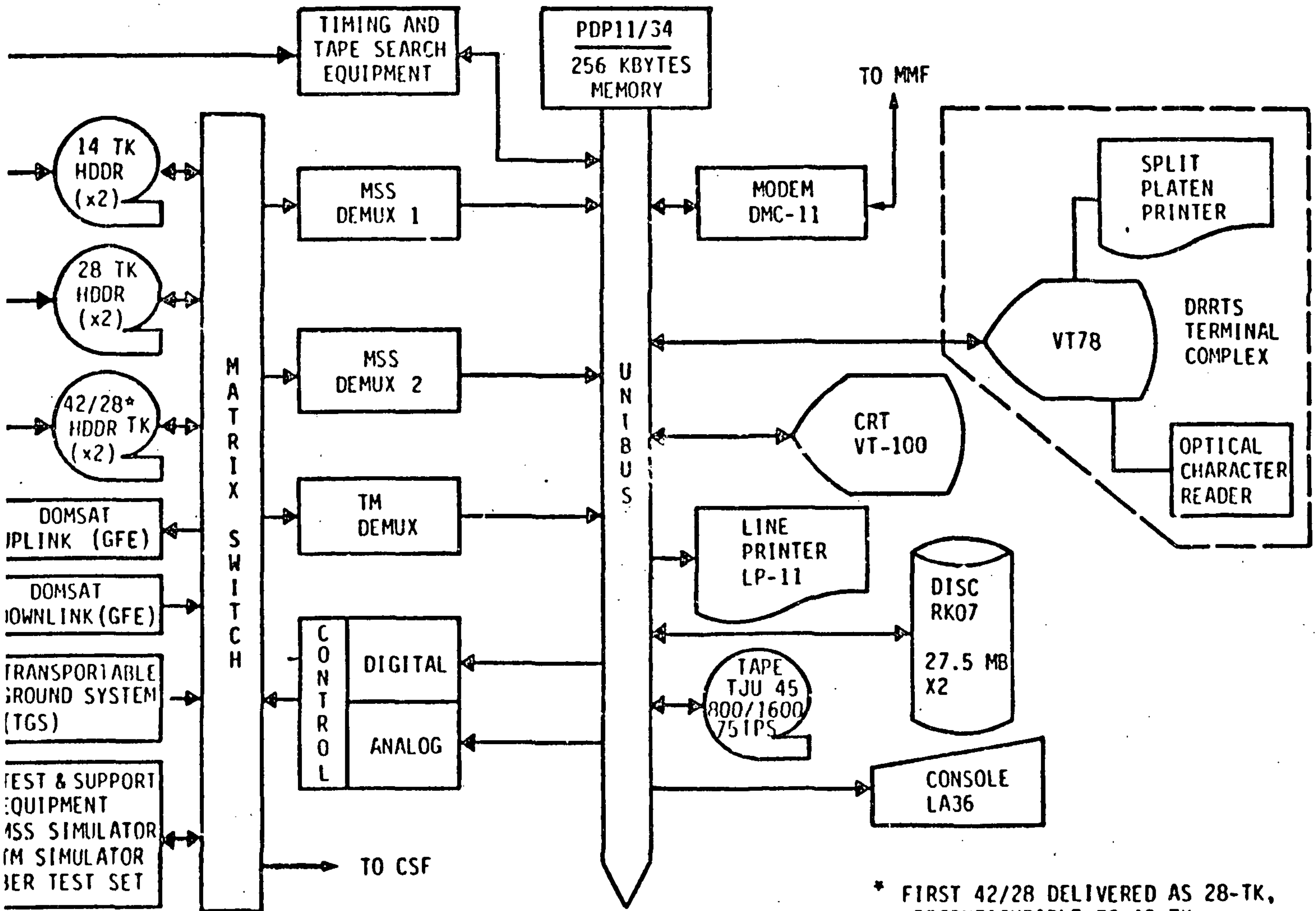
d. Inventory Control Processing

e. PDR and ESR Processing.

Support of PCS processing will continue throughout the 16-hour day keyed to the arrival of telemetry or HDT-R directories. Both archive and PEPG scheduling will be run periodically during the two shifts when inputs are available and the queues on the MIPS string are less than eight hours.

DRRTS

Figure 3-20 provides a block diagram of DRRTS. The DRRTS is scheduled to operate



* FIRST 42/28 DELIVERED AS 28-TK, RECONFIGURABLE TO 42-TK.

* SECOND 42/28 delivered as 42-TK, RECONFIGURED TO 28-TK, RECONFIGURABLE TO 42-TK.

Figure 3-20. DRRTS Hardware

two shifts a day seven days a week. The morning will be the peak demand period. The line test will be run the first thing each morning. The DRRTS will assign priorities to each major function. The major functions, in priority order, are:

a. TGS acquisition

b. EDC Domsat transmission

c. GSTDN processing

d. Foreign station processing

e. Tape copy.

processing will attempt to stay current with the acquisition of telemetry and ephemeris data from the CSF. Data selection and scheduling of data backlog by the operator will prevent overloading the system. The Phase 2 processing will be executed upon the receipt of new HDT-R directories in MMF from DRRTS.

Archive Scheduling

This MMF function has high priority if the two MIPS strings have a combined archive generation backlog of sixteen processing hours or less. This function will be run after PCS Phase 2 or after archive completion processing which has MIPS rework error codes. Allocation to the MIPS strings will be normally selected once a day. Reallocation of existing process requests due to a MIPS failure will only be initiated if a low backlog exists on the other string or the string will be down more than four hours.

Archive Generation

The generation of HDT-AM will occur primarily on two strings in MIPS. The manual cloud cover assessment will be performed during the calculation phase of archive generation. Quality Film Generation will be initiated during the generation of the HDT-A tape. Each MIPS string will maintain a minimum eight-hour backlog in the VAX to reduce the effect of a temporary MMF problem. The MIPS queue should be resequenced to optimize the disk farm size of thirty-four scenes without splitting the content of an HDT-R across two HDT-AMs. A physical HDT-AM will not contain more than a single logical to facilitate tape handling and time lines.

Process request feedback will not be released for MMF until the summary reports are inspected.

It is anticipated to consume the entire two shifts of both strings.

Archive Completion Processing

This function has a medium priority in MMF. It controls the updating of the data base and is the prerequisite for further PEPG and Copy/Uplink processing. Rework for archival generation will be handled on a case by case basis rather than automatically, requiring operator interaction with archive generation scheduling and other activities to effect data load balancing.

PEPG Scheduling

This MMF function has a medium priority except when the third MIPS string has less than a four hour backlog. The reallocation guidelines are the same as for archive scheduling.

PEPG Generation

The third MIPS string will normally be assigned responsibility for most of PEPG. All 241mm film products will need the TIPS string LBR which is only available on third shift. The dumps and reports of HDT-A tapes have a higher priority than the product (CCT and FILM) generation.

PEPG Completion

This MMF function will have a low priority during most of the day. On the second shift, as the next period of uplink approaches, it will be raised in

priority to clear all HDT-A for archive dissemination and copy/uplink process requests generation.

Archive Dissemination

This MMF function controls the generation of the GHIT and process request generation for uplink and copy. The opportunity to generate the GHIT will be delayed until the Quality Assurance personnel can verify the archive generation assessments. This will result in a once a day run of this function, usually on the second shift.

Copy/Uplink Processing

This DRRTS function will be the final step in the normal image data flow for MSS. The copy process is normally a backup for Domsat.

Control Point Library

This activity is spread between the MMF and MIPS. The key MMF activity is process request generation. It will have a high priority if the control point backlog in the MIPS is less than four hours. In the MIPS both the digitizing and control point selection will be run in a background mode.

Inventory Control

This will have a low priority in MMF and will not be run in the morning due to peak MMF utilization.

PDR/ESR Processing

This MMF function will not be run during the morning due to peak MMF utilization. It will be run as required during the rest of the day.

Data Base Maintenance

This is the highest priority function in the MMF. It is essential to maintain the integrity of the data base. This function can be divided into two areas, preventive and corrective. When corrective action, such a restore or data base edit is being performed, all other MMF activities must be halted.

A summary of the various activities is provided in Tables 3-1 through 3-3, giving high level characteristics. These tables provide only a guideline for normal operations and will vary based upon actual conditions.

The baseline scenario developed in this plan represents a chaining together of the basic activities to present a typical day's schedule. In actual operations each day's schedule will have to be flexible enough to allow modification based on current factors. Some of these factors are:

a. Project Office processing directives

b. High priority work orders

c. Computer availability

d. Processing backlogs

e. Maintenance activities.

The scenario will be described in terms of separate serial computer facility activities, but in reality each system is operated in parallel.

Table 3-1. MMF Activities

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ACTIVITY	PRIORITY	EST. WALL CLOCK RUN TIME	UNIT OF WORK	WHEN RUN	PREREQUISITE	COMMENTS
User Requests	Low	5 Min.	User ID	Daily flexible	None	Use dyna scheduli capabili acq. Re within 4
S/C Scheduling Planning	High	2 Hrs.	14 days	Weekly-Thur.eve		Required 11 a.m.
Scheduling	High	1 Hr.	48 Hrs.	Daily-morning		Required 10 a.m.
PCS Processing Phase 1	High	7 Min.	Interval	Multiple times	New CSF TLM	Stay cur with CSF
Phase 2	High	10 Min.	"	When new HDT-R Directories are available	HDT-R Directories & PCS Phase 1	
Archive Scheduling	High	5 Min.	HDT-RM	Periodically after Phase 2	PCS Phase 2	Maintain minimum queue fo MIPS
Archive Completion Processing	Med.	20 Min.	HDT-AM	Approx. 4-6 times a day. Starting around noon and every 4 hours after	MIPS Archive Generation	
PEPG Scheduling	Med.	5 Min.	HDT-AM	Approx. 4-6 times a day	Archive Completion Processing	Maintain minimum queue
PEPG Completion Film	Low	30 Min.		Once a day	MIPS PEPG Generation	
CCT/Dumps	Low	5 Min.		6-8 times a day		
Archive Dissemination	Med.	20 Min.	HDT-AM	Twice a day on second shift	QA release of HDT-A	

Table 3-1. MMF Activities (Continued)

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ACTIVITY	PRIORITY	EST WALL CLOCK RUN TIME	UNIT OF WORK	WHEN RUN	PREREQUISITE	COMMENTS
Control Point Generation	Med.					
List		5 Min.	Scene	As required	None	
P.R.		5 Min.	Scene	Once a day-a.m.		
Feedback		15 Min.	Scene	4 times a day	MIPS Proc	
Inventory Control	Low	45 Min.	N/A	Afternoon & 2nd shift	N/A	
PDR/ESR Processing	Med.	45 Min.	N/A	Afternoon & 2nd shift	N/A	
D.B.Maintenance						
Edit	High	30 Min.	N/A	As required	N/A	
Roll Offs	Low	Variable	N/A	Daily-3rd shift	Daily Save	
Daily Saves	High	2 Hr.	N/A	Daily-late 2nd shift	N/A	
Weekly Saves	High	8 Hr.	N/A	Weekly (Fri.)	N/A	
Journaling		TBD	N/A	As required	N/A	
H/W Maintenance						
Preventative	High	4 Hr.	N/A	Biweekly	N/A	
Corrective	N/A	2.4 Hrs.	N/A	As required	Not scheduled	Used only i planning
Line Test	High	30 Min.	TBD	Daily	None	

Table 3-2. MIPS Activities

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ACTIVITY	PRIORITY	EST WALL CLOCK RUN TIME	UNIT OF WORK	WHEN RUN	PREREQUISITE	COMMENTS
Archive Generation	High	7 Min.	Scene	2 shifts a day		Normally c 2 strings rework on string #3
MCAA	High	1 Min.	Scene	During calcu- lation phase	Data Extraction	
QAF	Med.	2 Min.	Scene	During output phase	Data Extraction	
PEPG						
Dumps	High	20 Min.	HDT-A	Continuously 2 shifts	None	Standard : dumps
CCTs	Med.	20 Min.	A Scene	As required	None	
	Med.	30 Min.	P Scene			
241 mm. Film	Med.	20 Min.	Scene	3rd shift on TIPS	CCT	Run on TII
Control Point						
L.B. Dig.	Med.	1-1/2 Hr.	Scene	Background 2 shifts/Day		20 pts pe scene
L.B.	Med.	3 Hr.	Scene	" "		Backgroun
C.P. Failure	Low	10 Min.	Control Point	As required		
Maintenance						
Preventative	High	DEC. 8 Hrs.	N/A	Monthly		DEC only
Corrective	High	N/A	N/A	As required		
Line Test	High	30 Min.	N/A	First thing each morning		
Engineering						
Enhancement	Med.	A R.				
Correct	High	P.R.				

Table 3-3. DRRTS Activities

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ACTIVITY	PRIORITY	EST WALL CLOCK RUN TIME	UNIT OF WORK	WHEN RUN	PREREQUISITE	COMMENTS
Image Acquisition						
TGS	High	20 Min.	Pass	Approx 9:30 a.m. 11:00 a.m., & 12:30 p.m.		No R-Direc
GSTDN	Med.	45 Min.	R-Tape	8:30 a.m.		Tape conv
Foreign Stations	Med.			As time is available		Tape conv
Uplink/Copy						
Uplink	High	20 min.	A-Tape	8:30-10:00		
Copy	Low	20 Min.	A-Tape	3rd shift	MMF Process Request	
H/W Maintenance						
Preventative	High	4 Hrs.	N/A			
Corrective	N/A		N/A	As required		
Line Test	High	30 Min.	TBD	First thing each morning		
Engineering						
Enhancement	Med.	A.R.				
Corrective	High	A.R.				

MIPS

Figure 3-18 provides a block diagram of a MIPS string. The MIPS strings are scheduled to operate two shifts a day, seven days a week. A computer operator and cloud cover analyst will be assigned to each string. In addition, control point technicians will utilize a portion of two MIPS strings for digitizing and processing control points.

The first thing each string will do is to run the line test. The scene which will be used in library build will be loaded from the HDT-A. The operator will organize his archive generation queue and transfer additional process requests to maintain eight hours of work backlog on the string. Archive generation will then be started. The cloud cover analyst will view the ingest and output phase on the Comtal and perform MCCA during the calculation phase. The operator will attempt to organize the archive generation queue to utilize the disk farm, which holds approximately 34 scenes. However, the contents of a single HDT-R should be placed on a single HDT-A. The operator will initiate the quality assurance film generation during the output portion of archive generation process feedback. The summary reports will be carefully reviewed by both individuals. Any problems will result in the feedback being placed in hold and notification of the Supervisor.

MMF

Figure 3-19 provides a block diagram of the MMF-M. The MMF is scheduled to operate two shifts a day, seven days a week. The morning will be the peak demand period in MMF. The line test will be run the first thing each morning. The support of daily spacecraft scheduling will have the highest priority each

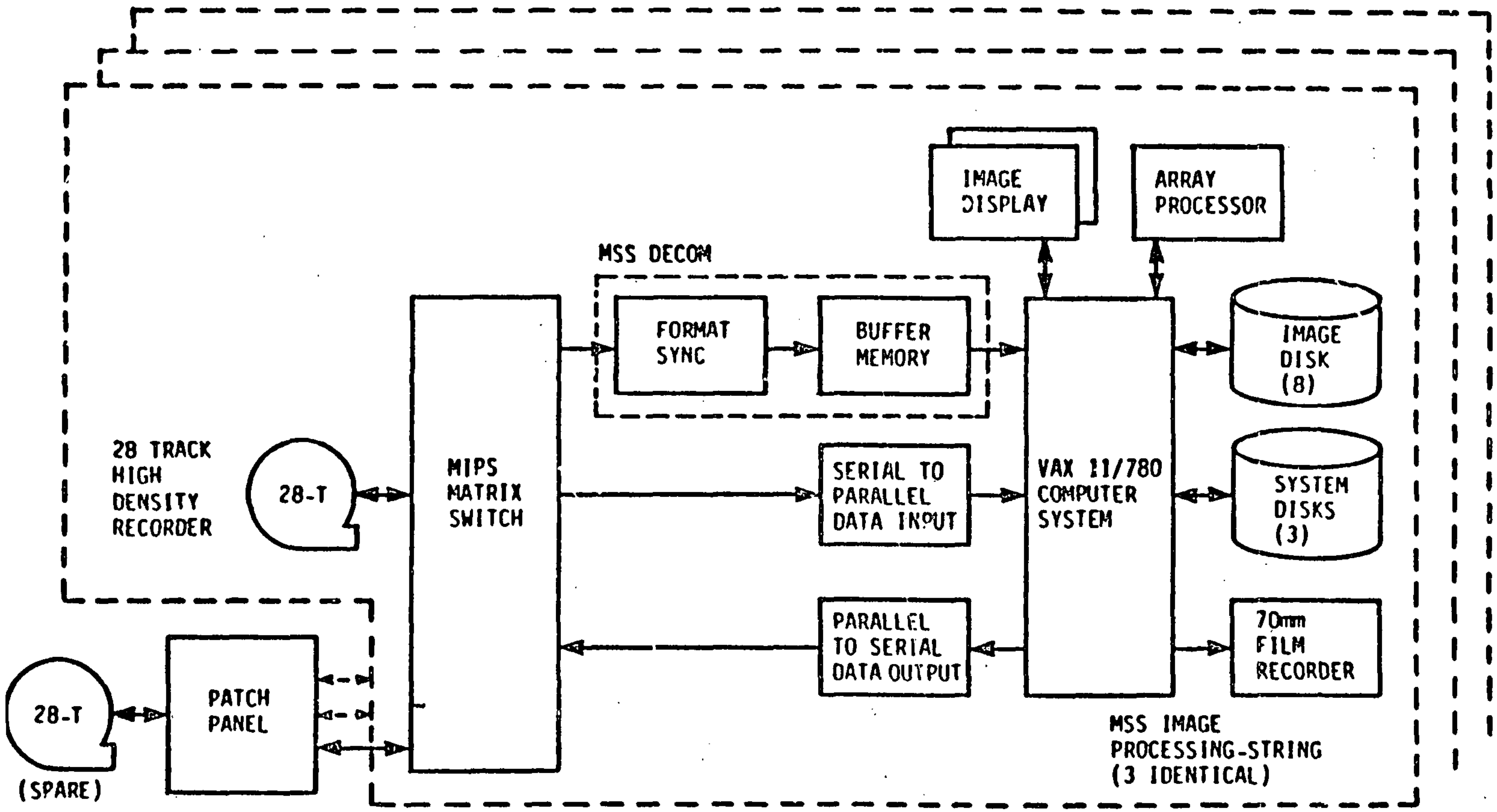

Figure 3-18. MIPS Hardware Architecture

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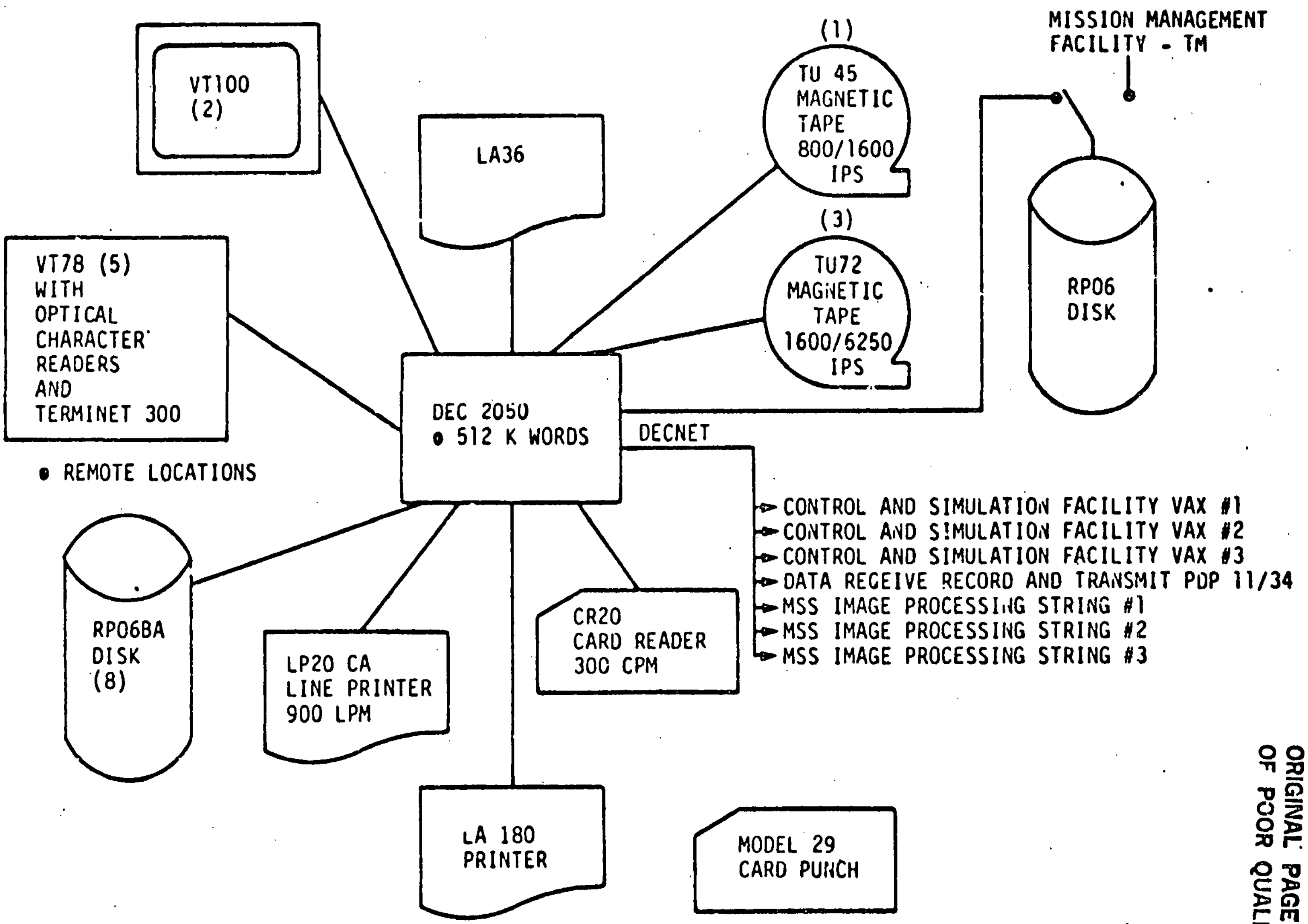

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Figure 3-19. Hardware Subsystem of the MMF-M

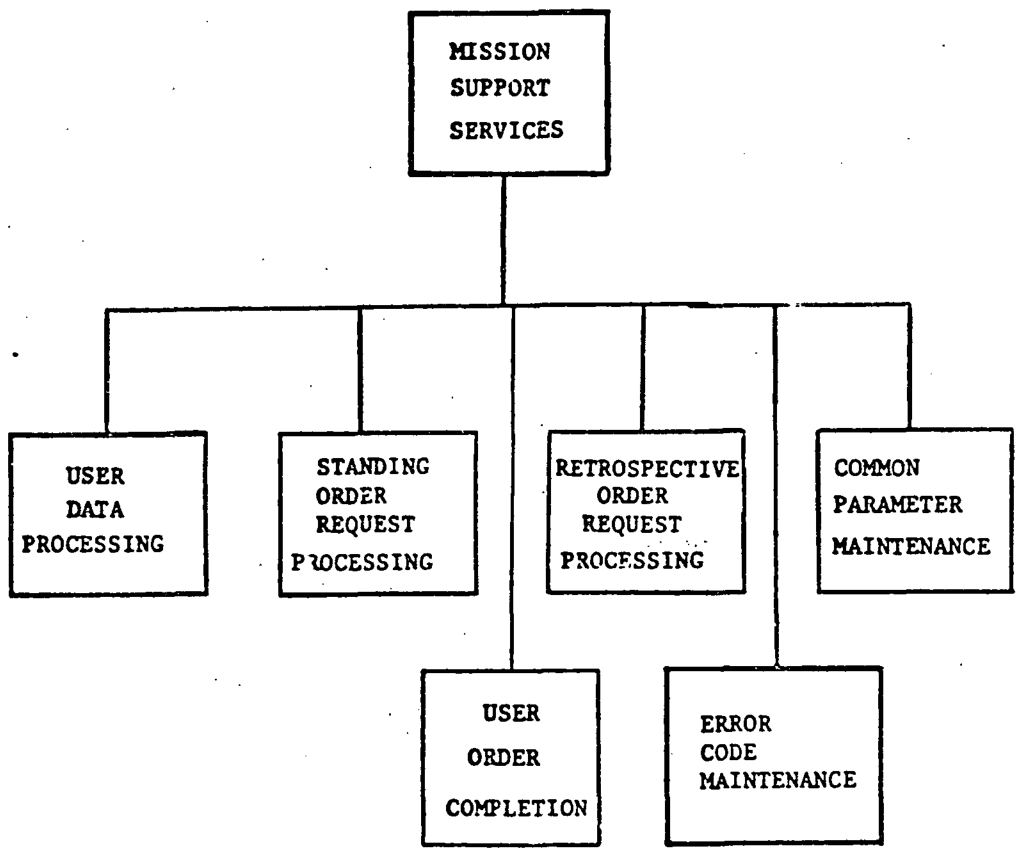

Figure 5-2. Mission Support Services Configuration

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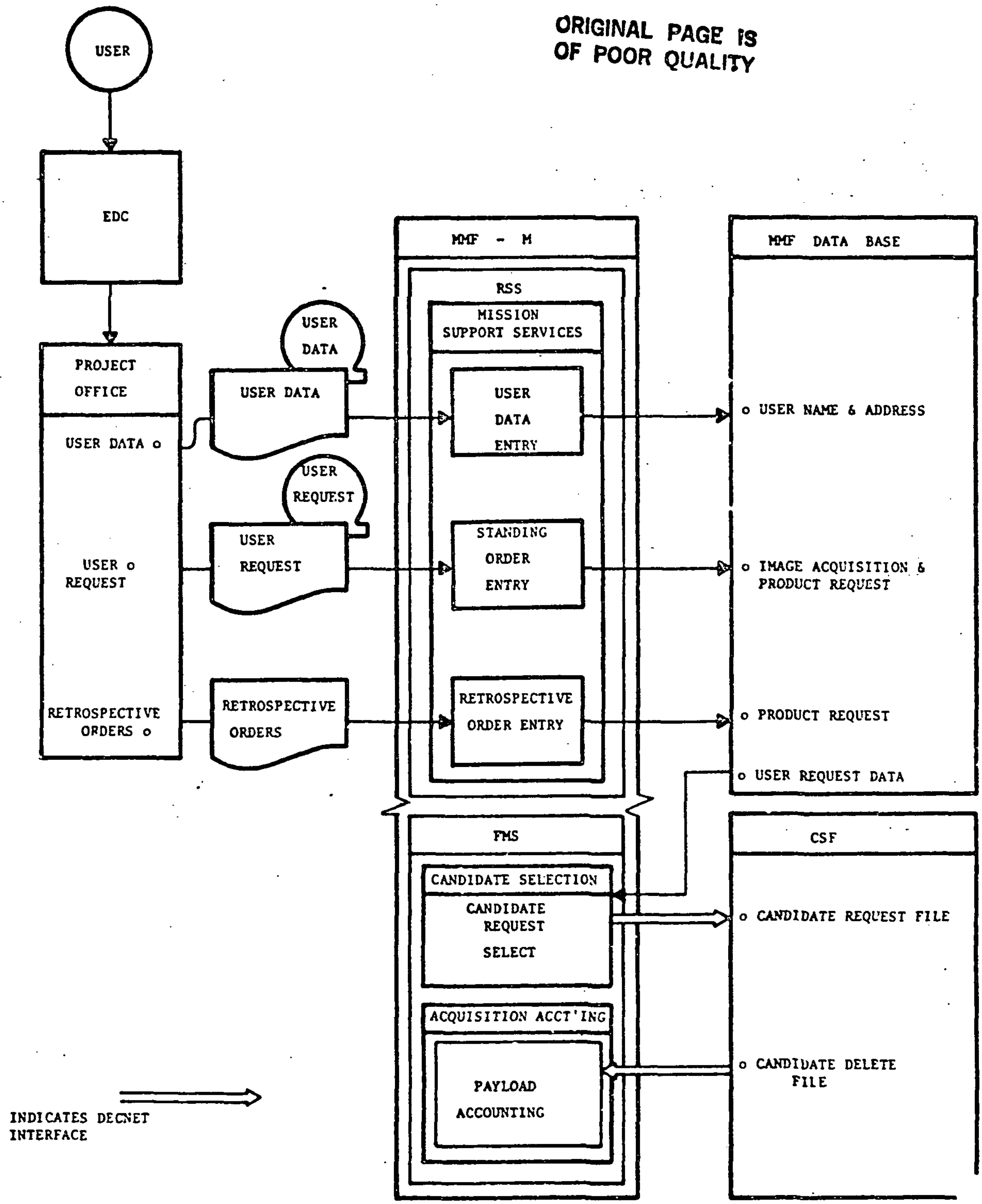

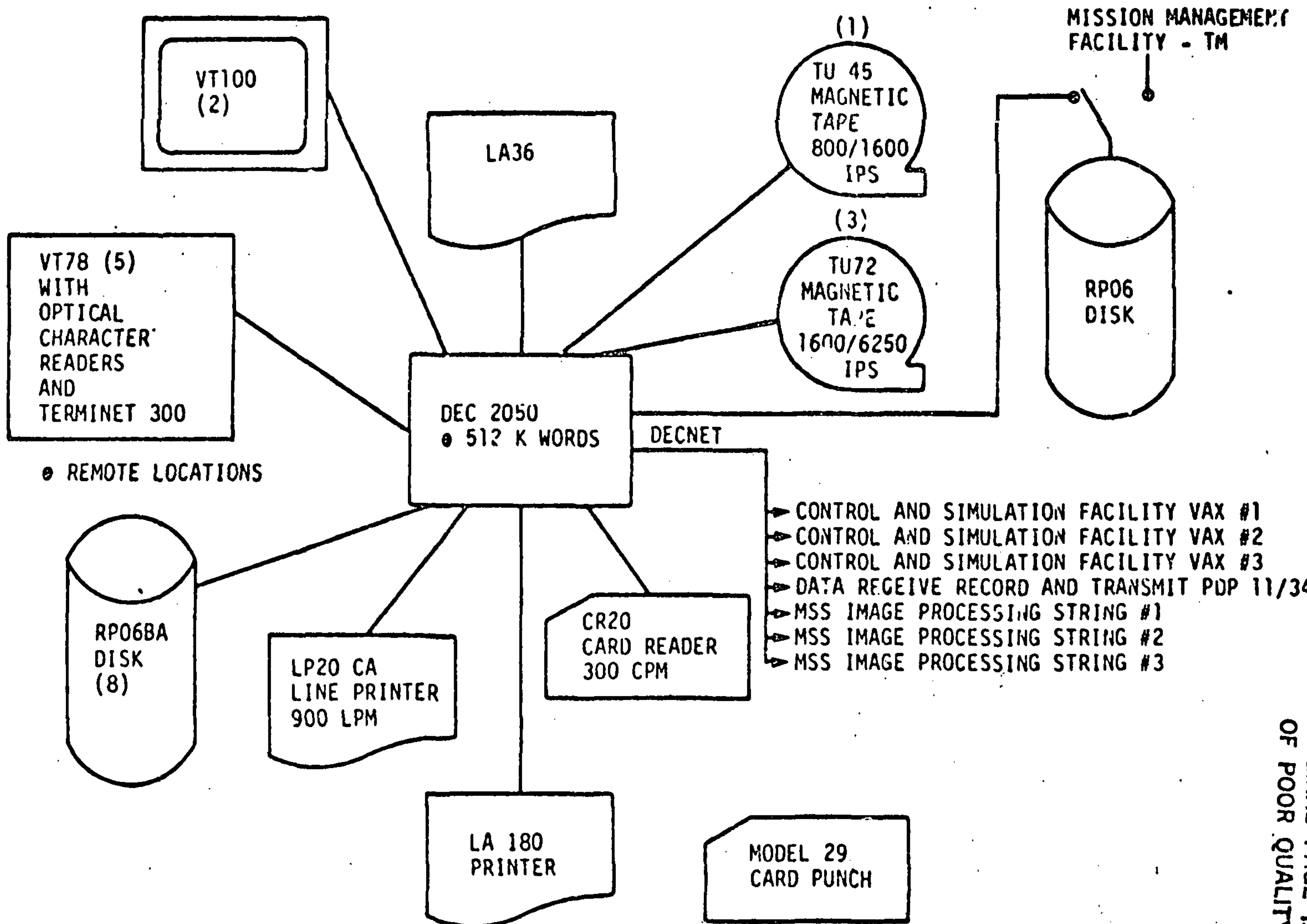

Figure 5-4. Hardware Subsystem of the MMF-M

81SDS4232
Revision A
16 July 1982

The Landsat-D user community may select MSS products and/or TM products. They may request image data that already exists (retrospective orders) or they may want specific earth image data that does not exist and will have to be acquired by the spacecraft at some future time (standing orders.)

All users must have valid ID numbers before they can avail themselves of Landsat-D products. Consequently, valid user names and ID numbers must exist in the MMF-M and/or MMF-T data base(s) before a user's request will be honored. In short, no valid user ID in the data base, no Landsat products to that user.

All "established" user requests for Landsat-D products are received by the Landsat-D Project Office (LPO); so are requests for ID numbers from prospective new users.

LPO processes user request information as outlined below, then transfers it to the RSS for ingest into the system.

a. Standing order requests are separated into two groups: those users wanting MSS products and those wanting TM products. EDC consolidates orders from end users on magnetic tapes and forwards them to LPO. Triplicated MSS user files and TM user files may physically be stored on the same tape or on two different tapes, one for MSS users and one for TM users. These tapes are forwarded to RSS for "batch entry."

   The LPO may also submit "written" standing order requests to the RSS for manual entry of these orders into the system via operator interaction with a computer terminal.

SECTION 4

OPERATIONAL CONCEPTS

4.1 OPERATIONAL ENVIRONMENT

The Ground Segment will operate in a very dynamic environment. This will result in various functions being performed simultaneously on different sets of data. Scheduling functions in preparation for tomorrow's acquisitions will be overlaid with the capturing of current acquisitions and processing of yesterday's acquisitions. This pipeline type of operation requires careful attention to all activities. Any prolonged interruptions will cause perturbations in the rest of the system. Any imbalances will quickly affect other areas of the Ground Segment.

Computer usage is organized by facilities. Figure 4-1 identifies the computer facilities availability during which operational activities will be performed.

	SHIFTS PER DAY	DAYS PER WEEK
Control and Simulation Facility	3	7
Mission Management Facility	2	7
Image Generation Facility	2	7
Transportable Ground Station	2	7

Figure 4-1. Ground Segment Operational Environment

4.2 METHOD OF OPERATIONS

The overall control of the Ground Segment will be accomplished by a system of work stations. These work stations will act as focal points within the Ground Segment. The six major work stations are:

a. Mission Operations

b. Mission Planning

c. Mission Management Facility Production Control

d. Image Generation Facility Production Control

e. Tape Staging

f. Quality Control.

Each of these stations monitors a group of activities related to people who staff them. The Ground Segment Staffing Plan provides details of the responsibilities of each individual in the M&O organization.

Each work station set-up will be tailored to the specific requirements of the functions being performed. All work stations need to establish methods of recording significant events. The method of organization of record-keeping will vary, but as a minimum, log books and binders need to be included at each station. Visual tracking systems should be employed that allow quick inspection and status determination.

The Mission Operations work station is the nerve center of the entire Ground Segment. It is staffed twenty-four hours a day by a Mission Supervisor who has responsibility for all activities. This work station requires access to

information via computer terminal as well as a manual tracking of all computer equipment. All problems will work their way to this station for dispositioning. All requests for external support will be initiated by the Mission Supervisors.

The Mission Planning work station will be maintained by the Flight Operations Planners and the Data Processing Planners. Key priorities in their respective areas will be tracked in this area. Schedule boards for the various computer systems will be maintained in this area.

The MMF Production Control Station will collect information concerning all MMF activities, in particular the generation of process requests. The process summaries of all MMF programs will be maintained. In addition, all data base activities will be monitored. This area is extremely important because it is the source of work for both CSF and IGF. Production Controllers will be responsible for overall tracking. The MMF Computer Operator and Data Technician will also support this work station.

The IGF Production Control work station will provide the focal point for coordinating the MIPS strings and DRRTS. Status will be maintained on an individual HDT tape basis. This station will interface heavily with the MMF Production Control and Tape Staging work stations. Production Control personnel will be responsible for this work station but will rely heavily upon IGF Computer Operators for inputs.

The Tape Staging work station will monitor all tape and film movements. This will include external interfaces with Building 23 and long-term tape storage. The TAS clerk and Staging Clerks will support this station.

The Quality Control work station provides monitoring of the Ground Segment. Records on products checked will be maintained by QA personnel. In addition, film produced for evaluation will be stored in this area. The Quality Control work station will also maintain records pertaining to PDRs and ESRs.

4.3 PERSONNEL RESPONSIBILITY

The tasks involved in operating the Landsat-D Ground Segment are divided among 158 individuals filling 63 different positions. The overall responsibilities for these portions are described in the M&O Staffing Plan. However, for the purpose of this Ground Segment Operations Plan, individual responsibility for performing each major function is identified in Figure 4-2. The overall M&O organization is outlined in Figure 4-3. Many support personnel interface with the actual performers by supplying inputs, supervision or control information to the performers. As a result, these support personnel also need to be aware of the actual functions being performed. Table 4-1 identifies support personnel and performers who need information contained in the various functional sections of the Ground Segment Operations Plan.

FUNCTION	PERFORMER
User Request Processing	Data Technician
Spacecraft Scheduling	Production Controller/Flight Operations Planner
Payload Correction Processing	Production Controller
Image Data Acquisition	DRRTS Computer Operator
Archive Scheduling	Production Controller
Archive Generation	MIPS Computer Operator/Cloud Cover Analyst
Archive Completion	Production Controller
PEPG Scheduling	Production Controller
PEPG Generation	MIPS Computer Operator
PEPG Completion	Production Controller
Archive Dissemination	Data Technician
Copy/Uplink Processing	DRRTS Computer Operator
Control Point Library Generation	Control Point Analysis Technicians
Image System Evaluation	Image Processing Analyst
Inventory Control Processing	Stock Clerk
PDR/ESR Reporting	All
Data Base Maintenance	Data Processing Planner/MMF Computer Operator/Data Base Administrator
Product Tracking	Staging Clerk/TAS Clerk

Figure 4-2. Individuals Responsible for Performing Major Responsibilities

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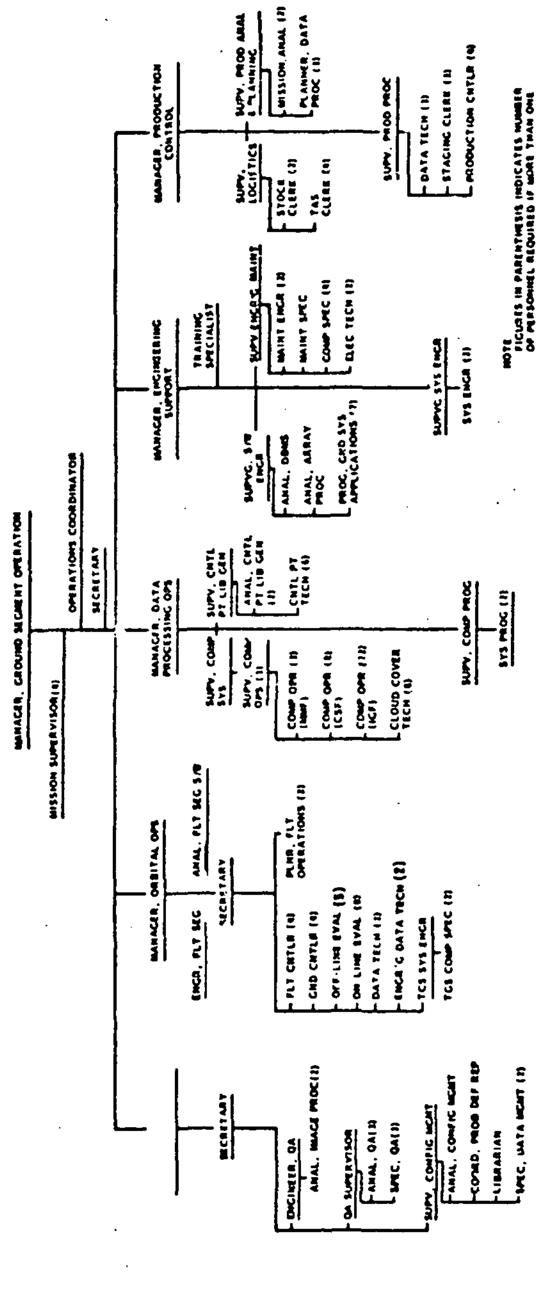

Figure 4-3. Overall M&O Organization

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Table 4-1. Information Matrix

	USER REQUEST PROCESSING	SPACECRAFT SCHEDULING	PAYLOAD CORRECTION PROCESSING	IMAGE DATA ACQUISITION	ARCHIVE SCHEDULING	ARCHIVE GENERATION	ARCHIVE COMPLETION	PEPC SCHEDULING	PEPC GENERATION	PEPC COMPLETION	ARCHIVE DISSEMINATION	COPY/UPLINK PROCESSING	CONTROL POINT GENERATION	IMAGE SYSTEM EVALUATION	INVENTORY CONTROL PROCESSING	PDR/ESR PROCESSING	DATA BASE MAINTENANCE	PRODUCT TRACKING
MISSION SUPERVISOR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLIGHT OPS PLANNER	X	X														X		
COMPUTER SYS SUPV.				X		X			X			X	X			X		
COMPUTER OPS SUPV.				X		X			X			X	X			X		
MMF COMP OPR.	X	X	X		X		X	X		X	X					X	X	X
CSF COMP. OPR		X														X		
IGF COMP OPR.				X	X			X				X	X	X		X		X
CLOUD COVER TECH.				X		X			X					X		X		
CNTL PT LIB SUPV.													X	X		X		
CNTL PT LIB ANAL.													X	X		X		
CNTL PT TECH.													X	X		X		
LOGISTICS SUPV.															X	X		
STOCK CLERK															X	X		
TAS CLERK					X			X								X		X
PROD PROC. SUPV.																X		
DATA TECH.	X	X	X		X		X	X		X	X					X	X	
STAGING CLERK					X			X								X		
PROD. CNTL	X	X	X	X	X	X	X	X	X	X	X	X				X	X	
PROD ANAL SUPV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MISSION ANAL.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
D.P. PLANNER	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
IMAGE PROC ANAL.			X	X		X								X	X	X	X	
QA SUPR.														X		X	X	
QA ANAL.			X					X			X		X	X		X	X	
QA SPEC.																X		
PROB DEF REP COORD.																X		

SECTION 5

USER REQUEST PROCESSING

5.1 PERFORMING FACILITY

User request processing is performed by the Mission Management Facility (MMF). The area within the MMF responsible for implementing the process is the request support subsystem (RSS). In processing user requests, RSS utilizes the mission support services software area in the MMF data base. MMF's hardware/software facilities are physically partitioned into two independent and operationally detached areas - MMF-M and MMF-T. MMF-M processes user requests for multispectral scanner (MSS) earth images. MMF-T processes user requests for thematic mapper (TM) earth images. However, processing of the LPO-generated, batch entry, standing order tape (which may contain both MSS and TM user orders) is initiated in the MMF-M.

5.2 PURPOSE

User request processing is the mechanism for entering, processing, modifying, and maintaining current status of orders for MSS and TM earth imagery products from the Landsat-D user's community.

5.3 BACKGROUND SUMMARY

As an aid to understanding the user request process with its associated operational procedures, a short discussion of the Landsat Projects Office (LPO) functions and activities relative to this process is presented. Refer to Figures 5-1 through 5-4 in conjunction with the material below.

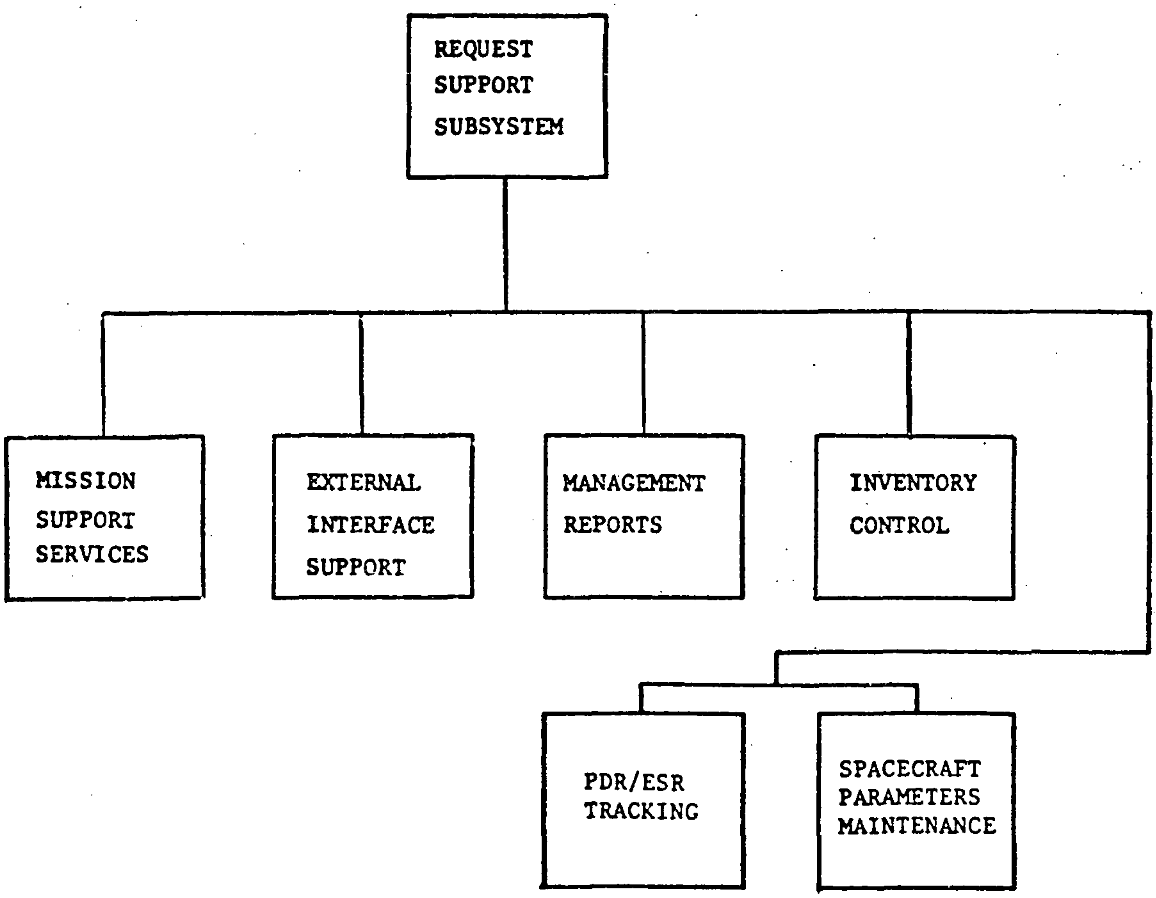

Figure 5-1. RSS Functions

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tape generation, from which the user information was derived. This will be followed by user information records.

Order Information File - ORDXXX.DDD

This file contains three different types of records. The header record contains tape ID, date and time of tape generation. The header record will be followed by sets of order and area records. Each order record contains all the order information except the geographic location. Hence each order record is followed by one or more area records. The area records are of two types:

a. Block

Describes geographic order (path,row) in terms of a block. (A number of scenes in more than one path)

b. Segment

Describes geographic area (path,row) in terms of segment. (A number of scenes in a single path)

Error Record Summary File - RSTAIN.SUM

The error record summary file contains:

a. Tape ID

b. Date and time the error message was generated

c. User order error messages

d. User area error messages.

Production Process Log File - RSTAIN.PLG

This file records the start and stop times of the RSTAIN process. When the stop time is not recorded, it implies that the process terminated abnormally.

5.6.1.7 Frequency

RSTAIN and RSOBEN are normally run together once a week, preferably on first shift. It is planned to run RSUDEN only with input from an interactive terminal (as opposed to from RSTAIN's output file). Since most orders will come from EDC, RSUDEN will run very infrequently.

5.6.1.8 Job Control Language (JCL)

The RSTAIN process is initiated by the following command:

@TAKE RSTAIN

5.6.1.9 Processing Messages

RSTAIN terminates normally with the message "RSTAIN-END OF PROCESSING."

5.6.1.10 Hardware Configuration

Figure 5-5 shows the MMF-M hardware configuration required to run the eight software units (RSTAIN, RSUDEN, RSOBEN, RSSOEN, RSUOCO/RSPACO, RSUOSM and RMECEN) comprising the user request process. Figure 5-6 shows the hardware configuration for running these software units in the MMF-T area.

Referring to both of these figures, the bracketed number sequence leading from each piece of equipment is the equipment's unique ID number. Equipment model numbers are also shown. (Equipment ID numbers are physically located in the upper right hand corner on the rear surface of each machine).

Note that the operator has options in selecting the terminal or tape drive required to run a program. For example, any VT78 or VT100 terminal shown as an alternate can be used to enter or monitor a program. Recall, however, that the MMF-M and MMF-T systems are not cross strapped; MMF-M functions must be performed on MMF-M designated machines, MMF-T functions must be performed on MMF-T designated machines.

5.6.1.11 Operating Instructions

RSS personnel receive and log all standing order user request tapes generated by the LPO. Tape ID number, contents description and the date and time the tape was received are to be entered in this log.

This tape may contain standing order requests for MSS products, TM products or both. Consequently, the first process consists of determining the contents of the tape, then, if necessary, separating MSS user requests from TM user requests so both can be processed independently in their respective areas.

Tape contents can be determined in the following manner:

a. Mount the tape on one of the TU72s in the MMF-M area.

b. On any VT78 or VT-100 terminal in the MMF-M area perform the following steps:

   1. Log on, enter your password

   2. Enter the MOUNT TAPE command

   3. Enter the DISMOUNT TAPE command

c. Read the resulting printout; if all the entries are TM users, remount

b. "Retrospective orders" are processed manually by the LPO and they are hand carried to the RSS for interactive terminal entry into the system.

c. ID numbers assigned to new users are manually processed by the LPO and this information is similarly transferred to the RSS for terminal entry.

Transferring user request data from the LPO to RSS will be a continuous process. Therefore, RSS will periodically provide the LPO with operational statistics and summary reports on user status - for example; listings of users who received their products, are waiting for products, or could not be serviced for various reasons, etc.

5.4 PROCESS DESCRIPTION

5.4.1 SCOPE

This section continues with a detailed description of the processes and procedures that RSS performs after receiving the LPO's input.

Information that follows applies to both MMF-M and MMF-T user request processing. While the hardware systems in these areas are not completely identical, the procedures implemented in these areas, for the most part, are identical. Differences will be noted where required. Procedures are described at the operator's level and address only those elements of software that are accessible to the machine operator via interactive terminal and are required by the operator to control processing. Imbedded software is not discussed. Refer

to the respective CPDS documents for information on this and other systems level subjects.

5.4.2 SUMMARY

Eight units of software have been designed to accommodate all foreseeable situations that may be encountered in processing user order requests from their receipt by RSS through user order closeout (in RSS). These software units are identified below by their GE Computer Program Design Specification numbers (CPDS) and their process and program acronym. In addition, the software units are arranged in their normal order of application in the "user order process." Items (g.) and (h.) below are separated from items (a.), (b.), (c.), (d.), (e.), and (f.), because items (g.) and (h.) can be executed without priority.

Several of these software units may be combined to run automatically via job control language; all can be run manually via operator interaction with a terminal. Requirements and circumstances at the time of processing dictate which mode is applied.

Specific procedures for running each of these software units commence with paragraph 5.6.1:

a. LSD-MMF-CPD-2101 - User and Order Tape Ingest (RSTAIN)

b. LSD-MMF-CPD-2015 - User Data Entry (RSUDEN)

c. LSD-MMF-CPD-2166 - Standing Order Batch Entry (RSOBEN)

d. LSD-MMF-CPD-2017 - Standing Order Entry (RSSOEN)

e. LSD-MMF-CPD-2019 - Retrospective Order Entry (RSROEN)

f. LSD-MMF-CPD-2087 - User Order Completion (RSUOCO/RSPACO)

g. LSD-MMF-CPD-2179 - User and Order Status Modifier (RSUOSM)

h. LSD-MMF-CPD-2021 - Error Code Entry and Update (RMECEN).

5.4.3 PRECEDING/SUCCEEDING PROCESSES

User request processing is the first process performed by the Ground Segment. It is succeeded by the spacecraft scheduling process (described in Section 6).

5.4.4 PROCESS RANGE

The range of the user request process is defined to be from RSS's receipt of user information from the LPO to the completion of the entry of "established" and "new" user names, ID numbers and product requests into the MMF-M and/or the MMF-T data base. It includes all the EDP bookkeeping associated with tracking user order status, user order modifications, user status modifications, data base maintenance, summary and production reports.

5.4.5 PROCESS FINAL PRODUCTS

The final products (output) of the user request process are

a. Users' names, ID numbers, product requests and status "in place" in the MMF-M and/or the MMF-T data base

b. Production logs

c. Updated common parameters area and operating system's directory of files within the data base

d. Current status summary reports

e. Error record summaries.

5.5 PROCESS ENVIRONMENT

5.5.1 HARDWARE REQUIREMENTS

All of the EDP systems required to perform the user request process are located in GSFC's Building 28 second floor computer room. Section 3 defines the MMF-M hardware system configuration in this area. High level block diagrams of the MMF-M and MMF-T EDP systems are shown in Figures 5-5 and 5-6 for reference.

Each of the detailed "user request process" operating procedures that follows references a low level hardware block diagram (Figure 5-7) that tells the machine operator which machines to use in running a particular unit of software.

5.5.2 SOFTWARE REQUIREMENTS

Repeated below in their semisequential processing order are the seven units of software required to run the user request process.

a. LSD-MMF-CPD-2101 - User and Order Tape Ingest (RSTAIN)

b. LSD-MMF-CPD-2015 - User Data Entry (RSUDEN)

c. LSD-MMF-CPD-2166 - Standing Order Batch Entry (RSOBEN)

d. LSD-MMF-CPD-2017 - Standing Order Entry (RSSOEN)

e. LSD-MMF-CPD-2019 - Retrospective Order Entry (RSROEN)

f. LDS-MMF-CPD-2087 - User Order Completion (RSUOCO/RSPACO)

g. LSD-MMF-CPD-2179 - User and Order Status Modifier (RSUOSM)

h. LSD-MMF-CPD-2021 - Error Code Entry and Update (RMECEN).

The GE Computer Program Design Specification number for each of these units of software is included for reference and it is recommended that all of these CPDS

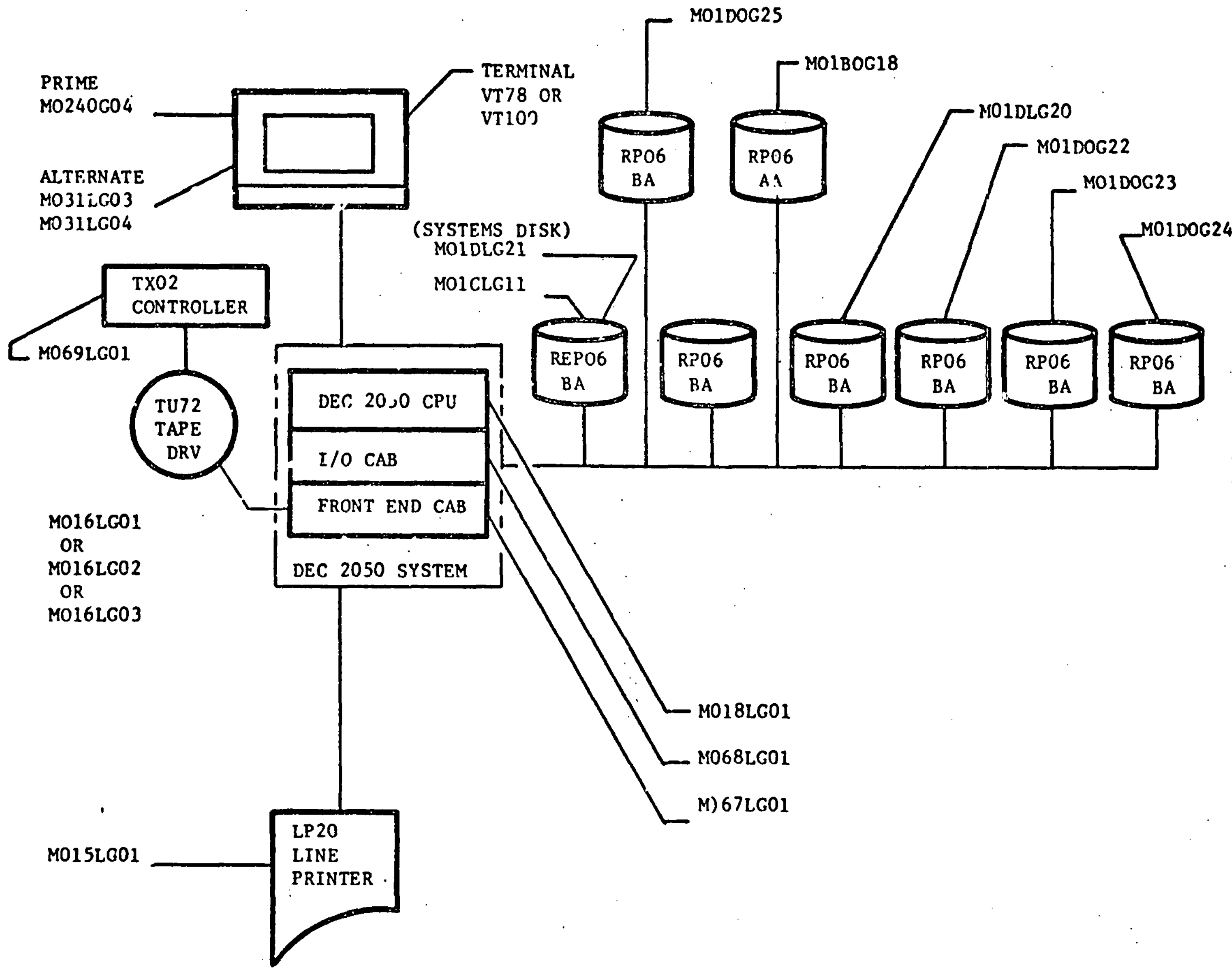

Figure 5-5. MMF-M Hardware Configuration for the "User Request Process"

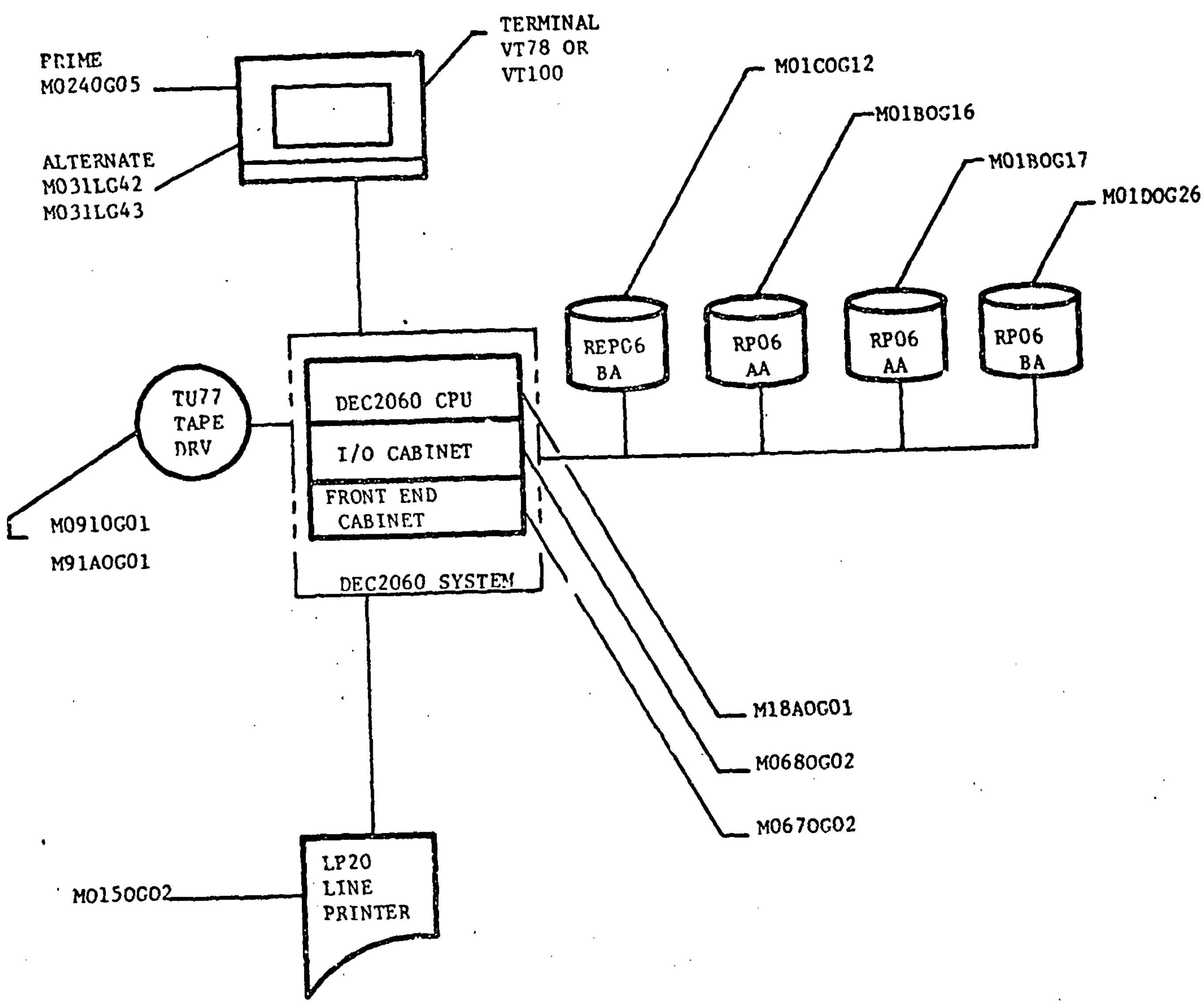

Figure 5-6. MMF-T Hardware Configur 'on for the "User Request Process"

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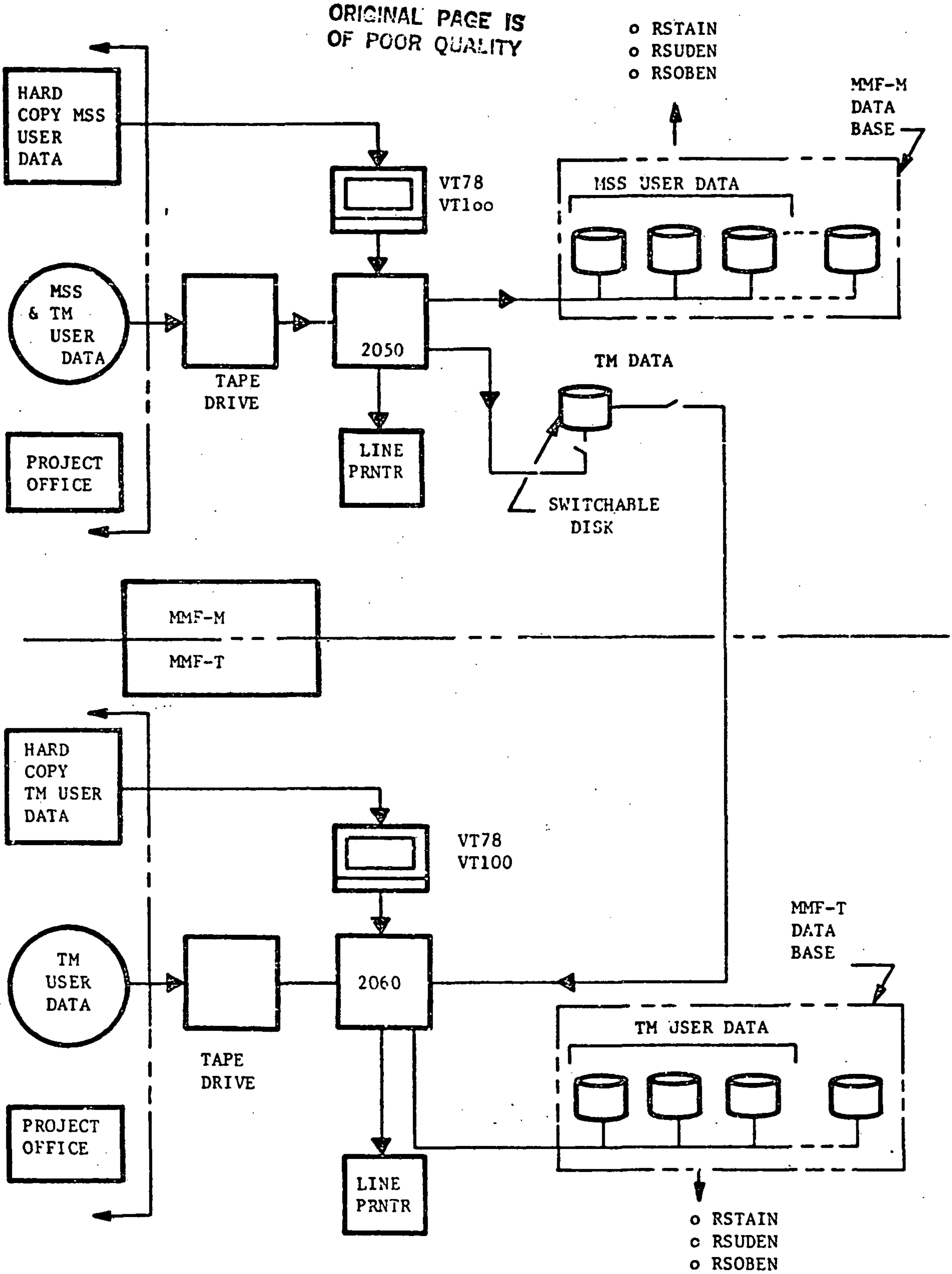

Figure 5-7. "User Data Processing" Hardware Requirements

documents be reviewed to supplement the information given here. Accompanying the software unit's title and CPDS number is the command acronym that causes the program to run. For example, if after logging on at a terminal

@TAKE RSTAIN

is entered, the "User Order Tape Ingest" software unit will commence processing (provided the information RSTAIN requires is available on the disk files). RSSOEN, RSROEN, RSUOSN and RMECEN are all run manually via interactive terminal. RSTAIN, RSUDEN and RSOBEN can be run manually or joined together to run automatically in the sequence shown. The JCL required to run RSTAIN, RSUDEN and RSOBEN sequentially will be specified by the MMF system's analyst. RSUOCO/RSPACO are normally clock triggered; however, they can be run manually if good reason exists to do so.

All of the software units mentioned can be "gracefully terminated" but only under the following circumstances:

a. Processing has not run to completion

b. The CONTROL key and the C key (CONTROL first, C second) are depressed simultaneously while processing is active.

5.6 *SOFTWARE UNIT OPERATIONS*

Before continuing with paragraph 5.6, the process background summary (paragraph 5.3) should be reviewed again because its contents are the basis for software unit operating procedures.

In addition, because of its importance, recall that all MMF-M user information

processing must be performed on MMF-M hardware; all MMF-T information processing must be performed on MMF-T hardware.

5.6.1 USER AND ORDER TAPE INGEST (RSTAIN)

5.6.1.1 Computer Program Design Specification

The source document for this software unit is LSD-MMF-CPD-2101.

5.6.1.2 Command Acronym

The command acronym for this software unit is @TAKE RSTAIN.

5.6.1.3 Purpose

RSTAIN processes the "user standing order" information from the mag tape supplied by the LPO. The process separates this information into two categories:

a. User information - user's name, mailing address and shipping address
b. Order information - user's ID, mission, sensor requirement, product requirements, etc.

and generates separate files for each category.

The "user information file" (USRXXX.ORC) is the input to the user data entry (RSUDEN) software unit.

The "order information file" (ORDXXX.ORC) is the input to the standing order batch entry (RSOBEN) software unit.

XXX is a sequence number between 001 and 999.

5.6.1.4 Description

This program uses three identical input disk files that contain four types of records:

a. Header record

b. User record

c. Order record

d. Area record.

The philosophy of using three identical input files is to decrease the chance of a read error stopping the execution of the program. If a read error is encountered on one file, the program will find its place on the next file and continue processing.

Only if a read error is found on all three files will processing be terminated. The header record contains the tape ID and time of creation of the input tape from which it was dumped. The user record contains user identification fields and mailing and shipping addresses. The order record contains information such as user ID, mission, sensor receiving station, product and acquisition hit frequency, etc. The area record has information on the geographical location (blocks or segments) for each order record. Thus, there may be multiple area records for each order record.

Each of the fields in the user, order, and area record are validated. If any of the fields in a record are invalid, the record and all appropriate error messages are written to the error file. The area records that follow (even if

they are valid) for this order are also written on the error file. After all input records have been read, the common parameter and operating system directory data base areas are updated and a summary report is generated, showing the number of records processed, number of records in error, and number of records written to output files. When the process is completed, the termination message "RSTAIN-END OF PROCESSING" is displayed on the KCRT.

5.6.1.5 Input

Input files (RSTAIN.001, RSTAIN.002, RSTAIN.003) are created by dumping the user and order information tape onto three identical disk files. Normally only RSTAIN.001 is used as an input file. However, RSTAIN.002 and RSTAIN.003 act as a backup in case there is a read error encountered in the file currently being read.

5.6.1.6 Outputs

RSTAIN creates the following output files:

a. User information - USRXXX.ORC

b. Order information - ORDXXX.ORC

   XXX = sequence number incremented by one for each run (current value stored in common parameter area)

c. Error record summary - RSTAIN.SUM

d. Production process log - RSTAIN.PLG.

User Information File - USRXXX.ORC

This file contains a header record that has the tape ID, the date and time of

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the tape in the MMF-T area and continue processing with the same procedures used in MMF-M area (except MMF-T hardware is required, see Figure 5-6). If the entries are MSS users or MSS and TM users combined, processing can continue either manually or automatically.

d. In the automatic mode, RSTAIN and RSOBEN are performed sequentially. To effect automatic processing, after copying the three files from tape to disk, enter

SUBMIT ORDER-ENTRY

When automatic processing is completed, hard copy printouts for RSTAIN, RSOBEN and RSUDEN are generated. Review these printouts against the data entry printout to be sure all users have been accounted for.

e. In the manual mode, the product user's requests are processed and only RSTAIN and RSOBEN are run. To initiate manual processing after the three files on the tape are copied to disk, enter

@ TAKE RSTAIN

Hard copy printouts resulting from manual and automatic processing are to be filed in their respective logs by the operator who ran the programs.

5.6.2 SOFTWARE UNIT #2-USER DATA ENTRY - (RSUDEN)

Computer Program Design Specification LSD-MMF-CPD-2015.

5.6.2.1 Purpose

RSUDEN provides the means for entering new users names, addresses, ID numbers and other pertinent data, into the MMF data base.

RSUDEN also allows the modification of existing user information already in the data base.

5.6.2.2 Description

RSUDEN can enter new user information into the MMF data base either manually or from the disk file produced by RSTAIN. It is not planned to do the latter.

Modification of existing user information already in the data base is performed manually via interactive terminal. In the manual mode, the operator transfers information from a hard copy user information form issued by the Project Office to the system via a VT78 or VT-100 terminal.

All user information processes - whether they relate to MSS product users or TM product users - are initiated in the MMF computer area on MMF-M and/or MMF-T equipment.

During the operation of the Ground Segment, the automatic mode will not normally be used; however, abridged information on automatic processing is provided here for future reference.

In the automatic mode, RSUDEN sequentially follows RSTAIN and searches the RSTAIN file. It compares user ID numbers on the RSTAIN created disk file against user ID numbers in the data base. ID numbers in the RSTAIN file - but not in the data base - represent new users. RSUDEN then adds the new ID numbers and the new user information found in the search, to the data base. In order to

implement the automatic mode, the MMF data base administrator must set a flag in the common parameters area of the data base using the DBUPDT utility program.

The CPDS for DBUPDT should be consulted for the detailed information required to update the common parameters so that RSUDEN can be run automatically.

Manual entry of new user information into the MMF-M data base and modification of existing user information in the data base are performed in the MMF-M area using the MMF-M's VT78 or VT-100 terminals (see Figure 5-5 for terminal location and identification).

With exception of the tape units, all of the EDP equipment required to run RSUDEN is the same equipment used to run RSTAIN (see Figure 5-5 and 5-6 for equipment definition).

5.6.2.3 Unit Input Description

In the automatic mode, the RSTAIN file is the input to the RSUDEN program. If RSTAIN is running automatically, RSUDEN and RSOBEN will follow automatically and no further operator intervention is required.

In the manual mode, input to RSUDEN is via interactive terminal and consists of transferring hard copy information from an LPO-generated user information form to the terminal. Information on the form defines whether a new MSS or TM user is being entered or an existing MSS or TM user status is being modified. The form's format is identical to the format of the CRT display that appears when RSUDEN is called manually.

5.6.2.4 Unit Output Description

In the automatic mode, the RSTAIN file is the input to the RSUDEN program. If RSTAIN is running automatically, RSUDEN and RSSOEN will follow automatically and no further operator intervention is required. In the manual mode, input to RSUDEN is via interactive terminal and consists of transferring hardcopy information from an LPO-generated user information form to the terminal. Information on the form defines whether a new MSS or TM user is being entered or an existing MSS or TM user status is being modified. The form's format is identical to the format of the CRT display that appears when RSUDEN is called manually.

RSUDEN end products are outlined below:

a. New user information (ID number, mailing address, shipping address, etc.) "in place" in the data base.

b. Existing user information in the data -- when required -- has been updated.

c. Printouts are generated:

   1. Processing Summary Report (RSUDEN.SUM)

   2. User Interaction Log (RSUDEN.UIC)

   3. Production Process Log (RSUDEN.PLG)

5.6.2.5 Frequency of Operation

RSUDEN is run infrequently by the MMF data technician on demand from the Project Office. Program run time is approximately five minutes.

5.6.2.6 DETAILED OPERATIONAL SEQUENCES

5.6.2.6.1 Manual Entry of New User Information

a. Read the user information form and determine if data pertains to an MSS or TM user.

b. Log on at the VT100 or VT78 terminal and enter your password, followed by

@TAKE RSUDEN.CMD

A blank user information form will appear on the CRT.

c. Enter the new user ID number as shown on the hardcopy form followed by

CARRIAGE RETURN

The data base will be searched to confirm that the ID number entered does not exist. Momentarily, a blank user form will reappear on the CRT.

d. Enter the new user's ID number and all the information given on the hard copy form exactly as shown on the hardcopy.

e. Enter

CARRIAGE RETURN

to send the completed form. If an error was made in completing the form, an appropriate error message will appear on the CRT. Correct the error and enter

CARRIAGE RETURN

f. A blank user form will reappear on the CRT.

g. When all of the new users are entered, terminate the program by entering

LINE FEED

LINE FEED

5.6.2.6.2 Manual Modification of Existing User Information

a. Read the user information form and determine if data pertains to an MSS or TM user.

b. Log on at the VT100 or VT78 terminal and enter your password, followed by

@TAKE RSUDEN.CMD

A blank user information form will appear on the CRT.

c. Enter the existing user ID number as shown on the hardcopy form followed by

CARRIAGE RETURN

The user record will be displayed on the CRT.

d. Enter the user information modifications exactly as shown on the hardcopy form. Check the entry for accuracy, then enter

CARRIAGE RETURN

e. A blank user information form will reappear on the CRT. Make the next entry.

f. After the last modification has been entered and sent, exit the program by entering

LINE FEED

LINE FEED

5.6.2.7 Record Keeping and Information Dissemination

Collect all printouts generated by RSUDEN and file them in their respective logs. Check these printouts for error messages that may have invalidated an entry.

5.6.3 STANDING ORDER BATCH ENTRY (RSOBEN) - LSD-MMF-CPD-2166

5.6.3.1 Purpose

RSOBEN verifies the existence of standing order input files and enters the user ground requirements (user ID number, mission, sensor receiving station, ground acquisition frequency, etc.) into the user support services area of the MMF data base.

5.6.3.2 Input Description

RSTAIN takes the information from the standing order user request tape and separates the data into two files, one containing user information, the other containing user product requirements. RSUDEN processes the first file and RSOBEN processes the second. Therefore, RSTAIN and RSUDEN must precede RSOBEN. RSOBEN reads the user product file and verifies that each user ground requirement is consistent with Landsat-D system capabilities and is in the proper format for processing. Valid entries are entered into the data base; invalid entries are written to a separate error file and are not entered into the data base. After all the files are processed, a summary report is generated that shows the number of records processed, the number and description of the records in error and the number of records successfully stored in the data base. RSOBEN also requires

input user support and common parameters areas of the data base. RSOBEN is normally run automatically; however it can be run manually, provided that RSTAIN and RSUDEN were previously performed. Again, MSS product users are processed in MMF-M; TM product users are processed in MMF-T.

5.6.3.3 Output Description

In addition to entering user product requirements in the data base, RSOBEN creates the following files.

a. Processing Summary RSOBEN.SUM

b. Error Record Summary RSOBEN.ERT

c. Production Process Log RSOBEN.PLG

5.6.3.4 Frequency of Operation

RSOBEN is initiated by the MMF data technician. If RSOBEN is run automatically with RSTAIN and RSUDEN, the process will occur once a week. When RSOBEN is run manually, it will be by Project Office request.

5.6.3.5 Detailed Operational Sequences

5.6.3.5.1 Automatic Mode

No operator interaction is required if the RSTAIN, RSUDEN and RSOBEN package is being run automatically.

5.6.3.5.2 Manual Mode

Assuming RSTAIN and RSUDEN ran succesfully, the following steps are required to run RSOBEN manually.

a. Use MMF-M equipment if MSS user products are being entered; use MMF-T equipment if TM user products are being entered.

b. Log on to the appropriate VT78 or VT100 terminal and enter your password.

c. Enter

@TAKE RSOBEN.CMD

followed by CARRIAGE RETURN

d. When RSOBEN completes processing, the program termination message

RSOBEN-END OF PROCESSING

will appear on the CRT.

e. To log off, enter:

LINE FEED

LINE FEED

5.6.3.6 Record Keeping and Information Dissemination

Each of the three printouts generated by RSOBEN i.e., RSOBEN.SUM, RSOBEN.ERT and RSOBEN.PLG should be reviewed by the data technician to verify successful entry of user product requests. All printouts are to be filed in their respective logs by the data technician who ran the program.

SECTION 6

SPACECRAFT SCHEDULING

6.1 ENVIRONMENT/RESOURCES

The spacecraft scheduling function commences in the MMF but is carried out predominantly in the CSF. The major equipment items employed by the scheduling function are:

a. The DEC system 20/50 in the MMF and its Decnet interconnection to the CSF

b. The CSF computer system based on the three VAX 11/780 processors with associated I/O devices and Nascom and Decnet links

c. Two flight scheduling subsystem (FSS) consoles, each with a CRT terminal

d. One KSR teletype for communication to the Network Operations Control Center (NOCC), and to the foreign ground stations

e. Telephone connections.

The major software items used in the spacecraft scheduling operation are:

a. The Flight Segment management subsystem (FMS) for creating sets of image data acquisition candidates

b. The flight scheduling subsystem (FSS) consisting of the scheduling support package (SSP), the mission scheduling package (MSP) and the acquisition analysis package (AAP)

c. The Network Control Center subsystem (NCCS)

d. Ground trace maps, predicted site acquisition tables and charts, and other scheduling aids.

6.2 OVERVIEW/BACKGROUND

The spacecraft scheduling function accepts user requests for image data acquisition, as compiled and validated by the request support subsystem (RSS) of the MMF; combines these with mission support requests; schedules the required link support; generates a detailed schedule of flight segment activities; and from the analysis of telemetry and link support information, feeds back the results. In the pre-TDRSS mode of operation, the spacecraft scheduling function develops a generic schedule request for the GSTDN, the Transportable Ground Station (TGS), Domsat, and other links, to anticipate all the recurring Landsat-D support requirements through each 16-day orbital repeat cycle. This is refined into a daily schedule that develops the detailed sequence of spacecraft and sensor activities for each ground station contact and issues in-pass briefing messages to the network and a mission activities list to the command processing subsystem. The scheduling function also provides a dynamic scheduling capability to handle last minute changes.

In addition to manipulating ephemeris data for its own purposes, the FSS software is responsible for ingesting and transferring to the command processing subsystem a variety of ephemeris and attitude related parameters needed in the FS. This includes star catalog data, Global Positioning System (GPS) parameters, and OBC ephemeris parameters. OBC memory update data is also prepared for uplinking in the FS.

Special scheduling tasks include the management of the record and playback sequences of the FSS standard tape recorders (STR); scheduling the wideband video recorders at domestic ground stations and at certain foreign ground stations for domestic use; scheduling DRRTS data reception from TGS and White Sands, and DRRTS transmissions to EDC.

Post-pass, the FSS will be provided selected telemetry data that is combined with link performance data from GSTDN for an assessment of the success in carrying out the schedule. The results of this assessment are fed into regular evaluation reports and into the MMF accounting system where notification of the acquisition of payload data triggers subsequent requests for image data processing. The FSS also prepares the MSS and TM ancillary data required for image processing.

6.3 FUNCTION DESCRIPTION

The spacecraft scheduling function is a complex of tasks that range chronologically over several weeks, and in services from link scheduling to the preparation of selected telemetry for use in image processing. Chronologically the task begins with the development of a generic link requirements schedule that accommodates, within the limits of a pre-TDRSS network, the anticipated recurring payload and mission support activities. This generic schedule will be figured on the Landsat-D 16-day orbital repeat cycle and, with occasional modifications, can serve for months as the basic scheduling plan. In the days preceding the actual events a detailed schedule is worked out, largely through automated processes. This "daily schedule" covers 24 hours and is completed at

about 1800 local time for events to start at 0300-0430 GMT the next day. Figure 6-1 blocks out the scheduling steps.

In addition to scheduling payload activities and sufficient network support to cover housekeeping telemetry, tracking data, and command loading, the FSS performs functions related to uplinking data to the FS and to post-pass analysis of results. These functions include:

a. Prepare in uplink format ephemerides for the OBC.

b. Generate an uplink star catalog table for use in the attitude control system (ACS).

c. Process Global Positioning System (GPS) support data for uplinking.

d. Accept payload requests from MMF for planning and scheduling.

e. Filter requests for payload data based on predicted cloud cover, sun angle, and conflicts with higher priority activities.

f. Schedule wideband video recorders at selected foreign and domestic sites.

g. Manage the STR record and playback.

h. Schedule DRRTS data transmission to EDC and receipt from White Sands.

i. Provide post pass analysis of mission support and payload events based on selected telemetry data and link support performance.

j. Process MSS and TM ancillary data from selected telemetry.

k. Feedback schedule status to MMF.

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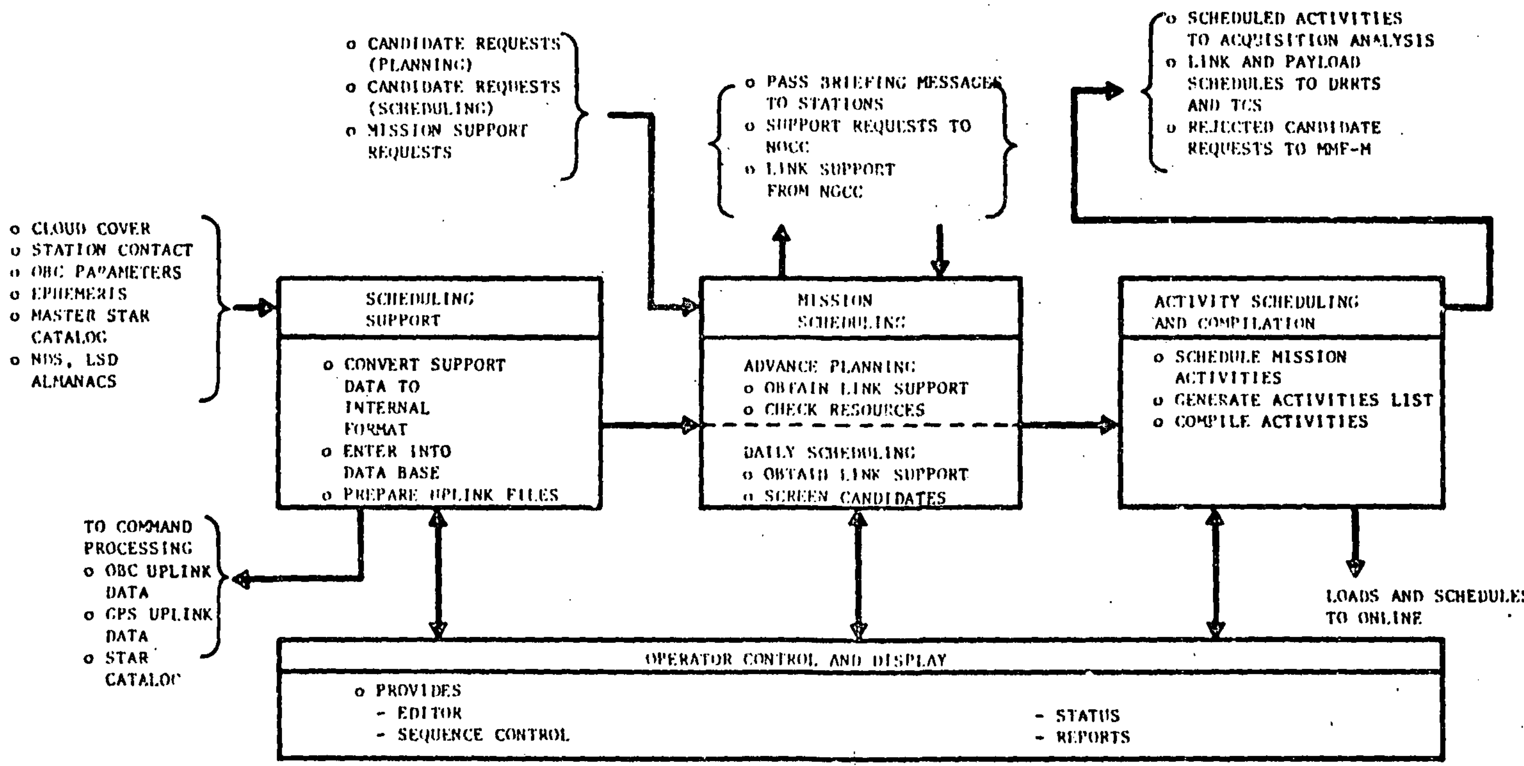

Figure 6-1. Planning and Scheduling Functional Flow

6.4 PROCESS OPERATIONS

6.4.1 PLANNING

6.4.1.1 Generic Scheduling

The first step in scheduling is to draw up a long range plan that matches the available GSTDN resources (augmented by TGS and wideband video recorders at selected foreign sites) with the general requirements of approved users and with the expected recurring requirements for mission support. This plan will be developed before launch based on the nominal orbit and the World Reference System. After the trajectory is adjusted the plan will be refined to match the actual timing of the orbit and accommodate any changes in mission support requirements. The long range plan will be drawn up by the flight operations planner in consultation with the ground controller. It will be a repetitive plan based on the 16-day cycle of the Landat-D ground trace. From the long range plan a generic set of network support requirements will be extracted and forwarded in a tabular form to the Network Operations Control Center (NOCC). (NOTE: It is assumed that the plan is within the bounds of basic agreements like the Landsat-D SIRD and relevant interface agreements. If not, any implied changes will have to be routed through channels for approval). Table 6-1 is a sample of the generic schedule for GSTDN. Generic support requirements that provide guidelines for GSTDN scheduling, e.g., preferred site support, time of day for support, geographical locations, minimum time between passes, etc. will be detailed in memorandum form and sent to the NOCC. These requirements will be consonant with the Network Operations Support Plan and the STDN document, Operations Interface Procedures between the STDN NOCC and Landsat-D CSF. As

requirements and conditions change, the long range plan will be adjusted but the basic schedule will probably hold for months at a time. The flight operations planner will be responsible for making any necessary adjustments. The flight operations planner will incorporate them into the link support requirements and transmit them to the NOCC either by teletype or by submitting new tables. Any change in the generic schedule requirements should be submitted to the NOCC at least 11 days prior to the start of the scheduling week in which the change is to be implemented.

The particulars of the mission support requirements, the inputs and outputs, the interfaces, the timelines, the software routines, etc., that drive and constrain the schedule planning will be given after the description of the major scheduling steps.

Table 6-1. Spacecraft Scheduling

DAY CYCLE DAY FIVE

STA	START	STOP	DESC NODE	REMARKS
BLT	0035	0046	119.50E	
ULA	0049	0058	011854	
BLT	0216	0228	93.69E	
ULA	0228	0238	030209	
GDS	0358	0412	67.87E	
ULA	0408	0420	044525	
PAC	0429	0440		
GDS K	0540	0553	42.06E	
ULA	0550	0602	062841	
PAC	0612	0616		
ULA	0733	0744	16.24E	
			081157	
MAD	0936	0951	09.57W	P/P PB
ORR	1213	1226	35.39W	
			113829	
BDA	1305	1320	61.20W	
			132145	
PAC	1443	1455	87.02W	CANADA DATA
BLT	1446	1458	150500	
PAC	1625	1641	112.83W	
BLT	1630	1636	164816	
GDS	1631	1645		
PAC	1807	1822	138.65W	
ULA	1808	1818	183132	
GDS K	1813	1827		
PAC	1949	2001	164.47W	
ULA	1950	2002	201448	

ULA	2132	2144	169.70E 215804
ULA	2314	2323	143.88E

6.4.1.2 Specific Scheduling

Specific support requests provide a particular time and location for STDN support. These are submitted by NCCS to the NOCC via teletype as soon as they are available. They will cover activities not anticipated in the generic schedules. The form and content of specific schedule requests for GSTDN support are negotiable and may change with time but will include the following parameters:

a. Date
b. Spacecraft (name or SUPIDEN)
c. Station
d. Signal Acquisition (as provided by predicted AOS or otherwise determined start of operation)
e. Signal Termination
f. Type of support which is identified by specific TTY characters that are defined in the generic support description or the NOSP
g. Antenna type - minimum antenna type only if it is different from that documented in the NOSP.
h. Remarks.

The processes from which specific scheduling requests are generated will be detailed in later subsections.

6.4.1.3 Update Schedule Support Data Base

This paragraph describes the steps necessary to compare the Landsat-D scheduling requirements against the support actually planned by the NOCC. These steps take

place on Friday, eight days before the first event on the schedule. It begins with the delivery at 0800L of products from the Orbit Computations Group (OCG) in hardcopy, graphical, and Computer Compatible Tape forms. These products, their content and format, are defined in the OCG/Landsat-D Interface Control Document, GES 10140. From the standpoint of advance planning, the items of interest are the orbital plots and the summary predicts in hardcopy; the ground trace predicts in plot form, and the FS pass predictions tape. In steps that will be delineated in paragraph 6.4.4, Computer Program Operations, a computer operator, at the direction of the flight operations planner, enters the pass prediction tape into the FSS data base. The content of this tape is given in Table 6-2 and a sample printout is shown in Table 6-3. Next the flight operations planner will make any desired changes in the scheduling data base as, for example, FS constraint parameters, anticipated link downtime, RF link parameter values.

6.4.1.4 The Weekly Advance Planning Schedule

On Monday, one week prior to the week to which it is applicable, the weekly advance planning schedule is transmitted by teletype from the NOCC to the NCCS. This schedule results from the NOCC's attempt to satisfy the CSF requirements as provided in generic and specific requests. This schedule has a specific format of which Table 6-4 is an example.

The flight operations planner enters the weekly advance planning schedule into the data base of the FSS via the link schedule handler (LSH) of the NCCS. The operation of this program will be given in paragraph 6.4.4.

Table 6-2. Flight Segment Pass Prediction Printout Record Content

ITEM	COL.[1]	PARAMETER [2]	FIELD SIZE	UNITS
1	2-7	TDRS Name or[3]	XXXX	Alphanumeric
		GSTDN Name	XXXX	Alpha
2	8(T)	TDRS Pass Type Flag[4]	X	Alphanumeric
3	9-13	Orbit Number[11]	XXXXX	Numeric
4	14	Pass Continuation Flag	X	Alpha
5	15-17	Day of Year	XXX	Day
6	19-24	Date (Year,Month,Day)	XX:XX:XXX	Numeric
7	26-31	Time[5]	XX:XX:XX	HRS:MIN:SEC
8	33-38	TDRS/SC Pointing Angle X-EW[6]	±XX.XX	Degrees
		or		
		GSTDN Antenna Pointing Angle X[7]		
9	39-44	TDRS/SC Pointing Angle Y-NS[6]	±XX.XXX	Degrees
		or		
		GSTDN ANtenna Pointing Angle Y[7]		
10	46-52	Landsat-D Range to TDRS or GSTDN	XXXXX.X	Kilometers
11	54-60(T)	TDRS Antenna Angle-PHI[8]	XXX.XX	Degrees
		or		
	55-60(G)	GSTDN Antenna Angle-Azimuth	XXX.XX	Degrees
12	61-67	TDRS Antenna Angle-THETA[8]	±XXX.XX	Degrees
		or		
	62-67(G)	GSTDN Antenna Angle-Elevation	±XX.XX	Degrees
13	69-73	TDRS Multiple Access (MA) Ant. Angle	XX.XX	Degrees
		or		
	69-75(G)	Landsat-D Height Above GSTDN	XXXXX.X	Kilometers
14	74(T)	Landsat-D-TDRS-Earth MA Ant. Angle Flag	X	Alpha
15	77	Landsat-D Sun Condition	X	Alphanumeric
16	78	RF Interference Flag (TDRS-WHSF-SUNAngle)	X	Alpha
		or		
		GSTDN/SC Range Cutoff Flag	X	Alpha
17	79	South Atlantic Anomaly or ZOE Zones Flag	X	Alpha
	80(G)	GSTDN Keyhole Flag	X	Alpha
18	81-84	Type of Event[9]	XXX	Alpha
19	85	TDRS-Sun Condition	X	Alphanumeric
		or		
		Station Mask Table Flag	X	Alpha
20	86(T)	RFI Flag (SC-TDRS-Sun Angle or TDRS-SC Sun Angle	X	Numeric
21	87(T)	RFI Flag-Earth Interference	X	Alpha

Table 6-2. (Continued)

22	88 (T)	Earth Background Flag	X	Alpha
23	89 (T)	Primary TDRS Tracker Flag	X	Alpha
24	91-119 (T)	TDRS/Landsat-D Dopplers	(10)	Alphanumeric
25	121-127 (T)	TDRS SATID (3)	XXXXXXX	Numeric
26	128-132	Event Duration if Event Entrance (minutes:seconds)	XX:XX	Numeric

NOTES:

(1) Column numbers correspond to those given in Table 3-2,* STDN pass predictions printout. Tape byte numbers are shown in Section 10.1.

(2) Where different parameters are listed for the same item number, the first entry shall be on the TDRS data record and the second entry shall be on the GSTDN data record.

(3) Station/TDRS names and TDRS Satellite I.D.s shall be on page 003, Table 3-2.

(4) Flags shall be as defined on pages 004-005, Table 3-2.

(5) Time shall be stated as Universal Time Coordinated (UTC).

(6) Measured degrees East(+), West(-), or North(+), South(-) of NADIR, as viewed from the TDRS.

(7) Measured degrees East(+), West(-) or North(+), South(-) of Zenith, as viewed from the GSTDN station.

(8) PHI and THETA shall be as defined on page 003, Table 3-2.

(9) Event codes shall be as defined on page 005, Table 3-2.

(10) TBD.

(11) Orbit one start shall be at first ascending node after injection.

(T) TDRS record only

(G) GSTDN record only

* Page references are to GES 10140

Table 6-3. STDN Pass Predictions Printout

```
PAGE NO. 001

STDN PASS PREDICTIONS FOR 8111111 LANDSAT-D
FROM 810923 230000 TO 811002 080000
PREDICTIONS WERE GENERATED 801212 023245
UMBRA-PENUMBRA EARTH SHADOW MODEL IS USED
LUNAR SHADOW COMPUTED FOR SPACECRAFT
LUNAR SHADOW COMPUTED FOR 2 TDRS
IONOSPHERIC HEIGHT TO COMPUTE RFI CONTACTS - 100 KMS FOR MULTIPATH ZONE ENTRANCES-EXITS
DATA OUTPUT AT 0360 SECOND INTERVALS FOR TDRS  PASS DATA
DATA OUTPUT AT 0060 SECOND INTERVALS FOR GSTDN PASS DATA


                DISTRIBUTED BY:
           SCHEDULING SYSTEMS SECTION
      OPERATIONS SCHEDULING SUPPORT BRANCH
      OPERATIONS SUPPORT COMPUTING DIVISION
           GODDARD SPACE FLIGHT CENTER
                  CODE 873.2

      PROGRAMMER:  JOHN A. MAHONEY   EXT. 5685

      OPERATIONS:  LINDA RODRIGUEZ   EXT. 5191
                   RUYU WANG         EXT. 8710
                   LEONARD CALHOUN   EXT. 5196


           PARAMETERS FROM TITLE RECORD OF THE EPHEMERIS TAPE

EPOCH TIME      PERIOD (MIN)   DELTA T (SEC)
810920 000000   000098.8476    00060.00

SEMI-MAJOR AXIS  ECCENTRICITY  INCLINATION  MEAN ANOMALY  ASCEND. NODE  ARG. OF PERG.
0007083.164 KMS  0.0000000     098.199 DEG  114.999 DEG   278.799 DEG   269.999 DEG

APOGEE           PERIGEE
0000705.019 KMS  0000705.019 KMS
```

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Table 6-3. (Continued)

PAGE NO. 002

SOUTH ATLANTIC ANOMALY RADIATION AREA COORDINATES
AS DEFINED 7 AUGUST 1975 BY THE OSO PROJECT OFFICE

DATA CODE = AA

AREA	SHAPE	VERTEX	LAT.XX	LON.XX
01	PENTAGON	01	-40.00	-080.00
		02	-10.00	-080.00
		03	05.00	-040.00
		04	05.00	-010.00
		05	-40.00	080.00

SOUTH ATLANTIC ANOMALY RADIATION AREA COORDINATES
AS DEFINED 17 MARCH 1980 BY THE SMM PROJECT

DATA CODE = AB

AREA	SHAPE	VERTEX	LAT.XX	LON.XX
01	PENTAGON	01	-40.00	-080.00
		02	-15.00	-030.00
		03	00.00	-050.00
		04	00.00	-020.00
		05	-40.00	050.00

SPACECRAFT FREQUENCY LIST

NO.	FREQUENCY	DESCRIPTION
1	15003.400000 MHZ	KU-B
2	02287.500000 MHZ	S-BAND - TRANSMIT
3	02265.500000 MHZ	S-BAND - TRANSMIT
4	02106.400000 MHZ	S-BAND - RECEIVE

RADAR RFI ZONE OF EXCLUSION BOUNDARIES
AS DEFINED 01 APR 1980 BY THE ERBE PROJECT

DATA CODE = ZA

ZONE	SHAPE	VERTEX	LAT.XX	LON.XX
01	IRREGULAR	01	52.00	012.00
		02	57.00	075.00
		03	70.00	029.00
		04	65.00	045.00
		05	77.00	090.00
		06	80.00	105.00
		07	65.00	-170.00
		08	53.00	157.00
		09	60.00	150.00
		10	53.00	140.00
		11	25.00	115.00
		12	40.00	045.00
		13	42.00	029.00
		14	40.00	019.00
		01	52.00	012.00

Table 6-3 (Continued)

PAGE NO. 003

G'TDN STATION COORDINATES

STATION NAME	LONG. DEG.XX	LAT. DEG.XX	HEIGHT MTRS.XX	ELX DG.	MASKING SELECTED	
WHSF	253.63	32.35	1177.00		TDRS CONTROL - NO PREDICTS GENERATED	
ACN3	345.67	-07.95	0528.00	10	NETWORK ANTENNA MASKS	
AGO3	289.33	-33.15	0707.00	10	NETWORK ANTENNA MASKS	
BDA3	295.34	32.35	-0034.00	10	NETWORK ANTENNA MASKS	
ETCA	283.15	38.99	0004.00	10	NETWORK ANTENNA MASKS	
GDS3	243.12	33.34	0913.29	10	NETWORK ANTENNA MASKS	
GWM3	144.73	13.31	0116.00	10	NETWORK ANTENNA MASKS	
HAW3	200.33	22.12	1140.00	10	NETWORK ANTENNA MASKS	
MAD3	355.81	40.45	0783.00	10	NETWORK ANTENNA MASKS	
MAD8	355.83	40.45	0808.00	10	NETWORK ANTENNA MASKS	
MILA	279.30	28.50	-0055.00	10	NETWORK ANTENNA MASKS	
ORR3	148.95	-35.62	0333.00	10	NETWORK ANTENNA MASKS	
QUIS	281.41	-00.62	3549.00	10	NETWORK ANTENNA MASKS	
ULA3	212.48	64.97	0279.00	10	NETWORK ANTENNA MASKS	
PAC	254.69	53.20	0016.09	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
SCC	304.41	49.92	0000.01	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
FUI	013.59	41.97	0006.50	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
CUB	307.92	-15.52	0002.76	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
ASA	133.87	-23.75	0005.55	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
MCA	302.47	-38.00	0000.00	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
KIS	020.25	67.87	0000.00	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
HAJ	139.75	35.66	0000.88	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
SEI	078.44	17.44	0006.19	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
LCC	103.75	36.01	0000.00	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE
NDI	077.21	28.61	0000.00	10	NETWORK ANTENNA MASKS	** NOT IN MASK TABLE

TDRS PARAMETERS AT EPOCH

N	SATID.	EPOCH DATE	LON.XX	LAT.XX	H KMS	SAAEW	SAANS	MAA	COMMON NAME	CONTROL
1	8000701	810923 230000	318.00	00.00	035778	22.5	31.0	13.0	TDE	WHSF
2	8001001	810923 230000	188.00	00.00	035778	22.5	31.0	13.0	TDW	WHSF

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DEFINITION OF THE COORDINATE SYSTEM AT THE SPACECRAFT IN WHICH THE SC/TDRS LOOK ANGLES PHI AND THETA ARE MEASURED

$\bar{R}$ = GEOCENTRIC SPACECRAFT RADIUS VECTOR

$\bar{V}$ = GEOCENTRIC SPACECRAFT VELOCITY VECTOR

$\bar{Y}$ = $\bar{V}$ CROSS R

$\bar{X}$ = $\bar{R}$ CROSS $\bar{Y}$

$\bar{Z}$ = $\bar{X}$ CROSS $\bar{Y}$ = $-\bar{R}$ IF CIRCULAR ORBIT

THE DRS LOOK ANGLES PHI AND THETA ARE GIVEN IN THE LANDSAT SYSTEM PHI(YAW) THETA(PITCH)

... ...SURED POSITIVE IN XY PLANE FROM +X TO +Y 0 THRU 360 ...REES

Table 6-3. (Cont. .ed)

PAGE NO. 005 — TDRS PASS LINE CONTINUED

085 = SUN CONDITION - TDRS
- BLANK = TDRS IN EARTH SHADOW
- * = TDRS IN SUNLIGHT
- P = TDRS IN EARTH PENUMBRA
- K = TDRS IN LUNAR PENUMBRA
- L = TDRS IN LUNAR SHADOW

086 = RFI FLAG - SC/TDRS/SUN ANGLE OR TDRS/SC/SUN ANGLE
- BLANK = 4 DG < ANGLE
- I = 0 DG < ANGLE < 1 DG
- J = 1 DG < ANGLE < 3 DG
- O = 3 DG < ANGLE < 4 DG

087 = RFI FLAG - MULTIPATH FRINGE AREA
- E = RFI

088 = EARTH BACKGROUND FLAG
- B = EARTH IN BCKGND OF TDRS/SC LINE

089 = PRIMARY TDRS TRACKER FLAG
- + = THIS TDRS IS PRIMARY TRACKER

091-119 = TDRS/SC DOPPLERS

121-127 = TDRS SATID

128-132 = EVENT DURATION IF EVENT ENTRANCE

DATA EVENT CODES

AOS	= STATION OR TDRS/SC SINGLE ACCESS AOS
LOS	= STATION OR TDRS/SC SINGLE ACCESS LOS
AOM	= TDRS/SC AOS - MULTIPLE ACCESS ANTENNA
LOM	= TDRS/SC LOS
BE	= TDRS/SC EARTH BACKGROUND ENTRANCE
BX	= TDRS/SC EARTH BACKGROUND EXIT
CAP	= TDRS/SC OR STATION/SC CLOSE APPROACH
ELM	= MAXIMUM SC ELEVATION ABOVE THE STATION
ELE	= SC SPECIAL ELEVATION POINT ENTRANCE
ELX	= EXIT
MRE	= MAX GSTDN/SC RANGE CUTOFF ENTRANCE
MRX	= EXIT
PTE	= PRIMARY TDRS ZONE ENTRANCE
PTX	= PRIMARY TDRS ZONE EXIT
TSE	= SUN ENTRANCE - TDRS
TSX	= SUN EXIT - TDRS
EIE	= RFI ENTRANCE - MULTIPATH ZONE

085 = STATION MASK TABLE FLAG
- U = UNMASKED DATA - NO MASK FOR STATION

128-132 = EVENT DURATION IF EVENT ENTRANCE

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DATA EVENT CODES

GIE	= RFI ENTRANCE - TDRS/WHSF/SUN OR SC/GSTN/SUN
GIX	= RFI EXIT - ANGLE = 1 DEG.
GOE	= RFI ENTRANCE - TDRS/WHSF/SUN ALIGNMENT ANGLE
GOX	= RFI EXIT - ANGLE = 5 DEG.
SIE	= RFI ENTRANCE - TDRS/SC/SUN ALIGNMENT ANGLE
SIX	= RFI EXIT - ANGLE = 1 DEG.
SJE	= RFI ENTRANCE - TDRS/SC/SUN ALIGNMENT ANGLE
SJX	= RFI EXIT - ANGLE = 3 DEG.
SOE	= RFI ENTRANCE - TDRS/SC/SUN ALIGNMENT ANGLE
SOX	= RFI EXIT - ANGLE = 4 DEG.
TIE	= RFI ENTRANCE - SC/TDRS/SUN ALIGNMENT ANGLE
TIX	= RFI EXIT - ANGLE = 1 DEG.
TJE	= RFI ENTRANCE - SC/TDRS/SUN ALIGNMENT ANGLE
TJX	= RFI EXIT - ANGLE = 3 DEG.
TOE	= RFI ENTRANCE - SC/TDRS/SUN ALIGNMENT ANGLE
TOX	= RFI EXIT - ANGLE = 4 DEG.

Table 6-3. (Continued)

```
: NO. 0007  STDN PASS PREDICTIONS FOR 8111111 LANDSAT-D    FROM 810923 230000 TO 811002 080000   GENERATED 801212 023245
;ID ORBIT DAY YRMODA HRMNSC  X-EW  Y-NS  TSRNG    LPH.XX THT.XX MA.XX   SIA     TIMEP  D1    HZ D2  HZ D3  HZ D4  HZ            MNSC
    00002 267 810924 014758 -06.97 05.44 44523.3  248.13-023.85 08.83   • Z EIE • E • -0160614-024488-024252-022549 8001001 0122
    00002 267 810924 014900 -07.21 04.93 44704.4  248.98-025.35 08.73   •         • E • -0155070-023642-023415-021771 8001001
    00002 267 810924 014920 -07.28 04.77 44757.7  249.26-025.80 08.69   •   PTX3• E • -0153265-023367-023143-021517 8001001
    00002 267 810924 014920 -07.28 04.77 44757.7  249.26-025.80 08.69   •   LOS • E • -0153265-023367-023143-021517 8001001

.ID ORBIT DAY YRMODA HRMNSC  X      Y     RANGE    AZM.XX  EL.XX HEIGHT  SRA                                              20  14  MNSC
    00000 266 810923 231151  90.00-83.47 03120.0  173.47  00.00 00001.1 •     ADS U                                              1353
    00000 266 810923 231200  85.62-83.64 03064.4  173.66  00.48 00025.5 •         U
    00000 266 810923 231300  47.09-83.49 02661.1  175.22  04.42 00205.5 •         U
    00000 266 810923 231400  15.54-80.56 02264.4  177.44  09.08 00357.7 •         U
    00000 266 810923 231409  11.93-79.86 02202.2  177.88  10.00 00379.9 •     ELE U                                              0919
    00000 266 810923 231500 -03.03-75.10 01877.7  180.80  14.87 [illegible] •   U
    00000 266 810923 231600 -14.88-66.71 01512.2  186.30  22.46 [illegible] •   U
    00000 266 810923 231700 -23.75-53.68 01189.9  196.49  32.82 006--.4 •       U
    00000 266 810923 231800 -31.33-33.28 00956.6  218.37  45.56 00682.2 •         U
    00000 266 810923 231843 -36.35-14.25 00886.6  246.79  51.46 00691.1 • M ELM U
    00000 266 810923 231849 -37.05-11.40 00884.4  251.49  51.46 00691.1 • M CAP U
    00000 266 810923 231900 -38.41-05.80 00886.6  260.70  51.21 00691.1 • M     U
    00000 266 810923 232000 -45.43 19.84 01016.6  296.86  41.30 00670.0 • M     U
    00000 266 810923 232100 -52.63 37.24 01284.4  313.74  28.88 00620.0 • M     U
    00000 266 810923 232200 -60.14 47.94 01624.4  321.96  19.48 00541.1 • M     U
    00000 266 810923 232300 -67.95 54.62 01998.8  326.65  12.54 00434.4 • M     U
    00000 266 810923 232328 -71.75 56.88 02181.1  328.22  10.00 00373.3 • M ELX U
    00000 266 810923 232400 -76.01 58.88 02388.8  329.64  07.17 00298.8 • M     U
    00000 266 810923 232500 -84.17 61.58 02787.7  331.71  02.76 00134.4 • M     U
    00000 266 810923 232544 -90.00 62.86 03083.3  332.86  00.00 00002.2 • M LOS U

.ID ORBIT DAY YRMODA HRMNSC  X      Y     RANGE    AZM.XX  EL.XX HEIGHT  SRA                                              18  12  MNSC
3   00000 266 810923 231430  82.32-69.67 02827.7  159.84  02.65 00131.1 •     ADS                                                1130
3   00000 266 810923 231500  77.33-68.24 02632.2  158.72  04.66 00214.4 •
3   00000 266 810923 231600  68.15-64.22 02240.0  155.86  09.31 00362.2 •
3   00000 266 810923 231607  67.15-63.63 02194.4  155.44  10.00 00378.8 •     ELE                                                0916
3   00000 266 810923 231700  60.35-58.29 01860.0  151.77  15.06 00483.3 •
3   00000 266 810923 231800  53.84-49.44 01502.2  145.35  22.56 00576.6 •
3   00000 266 810923 231900  48.40-35.79 01190.0  133.95  32.58 00641.1 • M
3   00000 266 810923 232000  43.84-14.82 00970.0  110.91  44.20 00676.6 • M
3   00000 266 810923 232040  41.21 02.89 00911.1  085.60  48.83 00684.4 • M ELM
3   00000 266 810923 232046  40.84 05.66 00909.9  081.37  48.83 00684.4 • M CAP
3   00000 266 810923 232100  39.96 12.63 00914.4  070.76  48.40 00683.3 • M
3   00000 266 810923 232200  36.61 38.12 01048.8  037.22  39.15 00661.1 • M
3   00000 268 810923 232300  33.63 56.08 01315.5  020.43  27.68 00610.0 • M
3   00000 266 810923 232400  30.90 67.97 01651.1  011.73  18.77 00531.1 • M
3   00000 266 810923 232500  28.19 76.25 02021.1  006.59  12.09 00423.3 • M
3   00000 266 810923 232523  27.08 78.90 02174.4  005.09  10.00 00372.2 • M ELX
3   00000 266 810923 232600  24.95 82.43 02408.8  003.20  06.85 00287.7 • M
3   00000 266 810923 232600  24.96 82.50 02413.3  003.18  06.73 00285.5 • M LOS

.ID ORBIT DAY YRMODA HRMNSC  X      Y     RANGE    AZM.XX  EL.XX HEIGHT  SRA                                              18  12  MNSC
    00000A266 810923 231820 -90.00-78.90 03097.7  191.09  00.00 00001.1 •     ADS U                                              1226
    00000 268 810923 231900 -81.14-75.53 02653.3  193.70  02.14 00107.7 • M     U
    00000 266 810923 232000 -73.12-69.96 02521.1  199.23  05.70 00250.0 • M     U
    00000 266 810923 232100 -69.10-62.12 02207.7  206.30  09.56 00366.6 • M     U
    00000 266 810923 232106 -68.90-61.15 02175.5  207.19  10.00 00377.7 • M ELE U                                              0654
    00000 266 810923 232200 -67.55-52.04 01925.5  215.79  13.57 00454.4 • M     U
    00000 266 810923 232300 -67.39-39.33 01721.7  228.40  17.29 00513.3 • M     U
    00000 266 810923 232400 -68.24-24.19 01608.8  244.17  19.75 00543.3 • M     U
    00000 266 810923 232419 -68.67-19.23 01593.3  249.46  20.17 00547.7 • M ELM U
    00000 266 810923 232434 -69.08-15.03 01589.9  253.95  20.17 00548.8 • M CAP U
```

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Table 6-3. (Continued)

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```
                                                                                                    PAGE   4
ORBIT    DATE 810923                    TOPSAS ORBITAL PLOT FOR 8111111 LANDSAT-D              S START  DURA EL

R=00000                                                       T---------------------------     TDE  230000 5841
T=215050                                                      T---------------------------     TDW  230000 16920
L=                                                                      M-----------           MCA  231151 1353 51
H=                                                                        A----------          AGO3 231430 1130 48
FMS=                                                                        C---------         CUB  231820 1226 20
LMS=                                                                             Q-----        QUIS 232326 1229 41
DOS=9851
 SUN     ---------------------------------------------------------------------------------     LMS
 O.E.                                                              S                           FMS
                                                                                ---------      .3B 231838 0856
                                                                                ---------      .AA 231838 0915

R=00001 T-----------------------
T=232941T--------IIIIIIIIIIIIIIIIIII------------------------------------------------------
L=-072  C
H=00704 O----
FMS=     M-----------                                                                          MILA 233100 1339 74
LMS=     B-----------                                                                          BDA3 233154 1222 19
DOS=9854   E---------                                                                          ETCA 233544 1024 56
             S---------                                                                        SCC  233819 0957 07
              P-----------                                                                     PAC  233908 1303 26
                        U----                                                                  ULA3 234320 0427 14
                            U-                                                                 ULA3 235407 0201 11
                                L-------------                                                 LCC  000204 1106 88
                                    N-------                                                   NOI  000747 0515 05
                                      S---------                                               SEI  001025 0930 07
                                                             T----------------------------     TDE  003442 6504
                                                                       M------                 MCA  005142 0729 04
                                                                         A--------             AGO3 005315 0857 14
                                                                                  O----        QUIS 010255 0814 09
 SUN     ---------------------------------------------------------------------------------     LMS
 O.E.                      N.                D.                    S.                          FMS
                      ------------                                                             .ZA 235753 1334

        000      010      020      030      040      050      060      070      080      090      100
```

Tatle 6-4. Weekly Advance Planning Schedule Format

ORIGINAL PAGE IS
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RR GOPS GLND
DE GNBS 001
16/1215Z
INFO GOPS

REF: FOLLOWING IS THE POCC TELEMETRY AND COMMAND REQUEST FOR THE PERIOD 000Z NOV 23, '81 THRU 2359Z NOV 29, '81.

811123 LNDST-4

STATION	ORBIT NBR.	DATA AOS	DATA LOS	COMMAND TYPE	COMMAND TIME	REMARKS	
BLT	00124	0046	0100			RCTD	RR 0040 KB
01 VOIC	0026-0112						PDF-B,D,2W,
01 WMDX	0026-0112						SEQ GULA
GBLT/GLND							
ULA	00124	0059	0113			RCD	AF 0000 KB
01 VOIC	0026-0115						PDF-B,C,
01 WMDX	0026-0115						SEQ GBLT
01 SMIB	0026-0115						
GULA/GLND							
BLT	00125	0226	0243			RCTD	RR 0040 KB
01 VOIC	0206-0255						PDF-B,D,2W,
01 WMDX	0206-0255						SEQ GULA
GBLT/GLND							
ULA	00125	0239	0254			RCD	AF 0000 KB
01 VOIC	0206-0256						PDF-B,C,
01 WMDX	0206-0256						SEQ GBLT
01 SMIB	0206-0256						
GULA/GLND							
GDS	00126	0409	0425			RCTD	AA 0008 KB
01 VOIC	0349-0437						PDF-B,2W,
01 WMDX	0349-0437						SEQ GULA
GGDS/GLND							
ULA	00126	0419	0435			RCD	AF 0040 KB
01 VOIC	0349-0437						PDF-B,C,
01 WMDX	0349-0437						SEQ GGDS
ULA	00126	0433-0446				D	XX 0128 KB
01 VOIC	0433-0446						(I) PDF-3
01 WMDX	0433-0446						
01 SMIB	0433-0446						
GULA/GLND							

6.4.1.5 Transfer Payload Candidate Requests

The flight operations planner next initiates a program called candidate request generation which is a part of the FS management subsystem of the MMF. It searches the data base of user requests as maintained by the output of the request support subsystem (RSS) software described in Section 4 and generates a file of candidate requests. The candidate requests are a scene by scene breakdown of the validated standing orders developed in RSS. These candidate requests are flagged as planning requests covering the planning period designated by the operator. The details of running this routine are described in paragraph 6.4.4. The format of this file is given in the MMF/CSF ICD, GES 10093.

Next, the ground controller activates from the CSF a Decnet transfer to the data base of the CSF system.

6.4.1.6 Mission Support Requests

In a formal sense mission support requests come to CSF from Mission Management. Operationally, however, they have several points of origin. The mission support planning software has a table driven function that ensures that a predictable list of support activities will be included in the schedule requests. In addition, the flight operations planner will enter such specific mission support requests as have been brought to his attention by flight management.

The flight operations planner will activate the mission support planning software according to directions provided in paragraph 6.4.4.

6.4.1.7 Obtain Link Support

The steps described in this subsection are the culmination of the planning phase. They are, in summary:

a. Plan as many of the payload and mission support requests as can be fitted into the resources and time slots allocated by the Network in its weekly advance planning schedule.

b. Determine what requests remain unsupported.

c. Determine whether unsupported requests can potentially be accommodated in other time slots or with other Network resources.

d. Request from the NOCC the additional network support indicated by step (c.).

e. File for subsequent resubmittal support requests not met.

These steps occur as soon after the receipt of the weekly advance planning schedule as the demands on the flight operations planner's time permits.

The obtain link support (OLS) program is a part of the FSS. Its operation is described in paragraph 6.4.4. It will schedule the Landsat-D Network support requirements based on the payload candidate requests, the mission support requests, and the contents of the pass prediction tape. This schedule will be compared to the NOCC developed weekly advance planning schedule and the differences resolved in subsequent interaction with the NOCC.

The OLS has the following essential features:

a. In time/priority order it fits payload and mission support requests into the potentially available contact periods of the ground antennas.

b. It matches data operations to link capabilities.

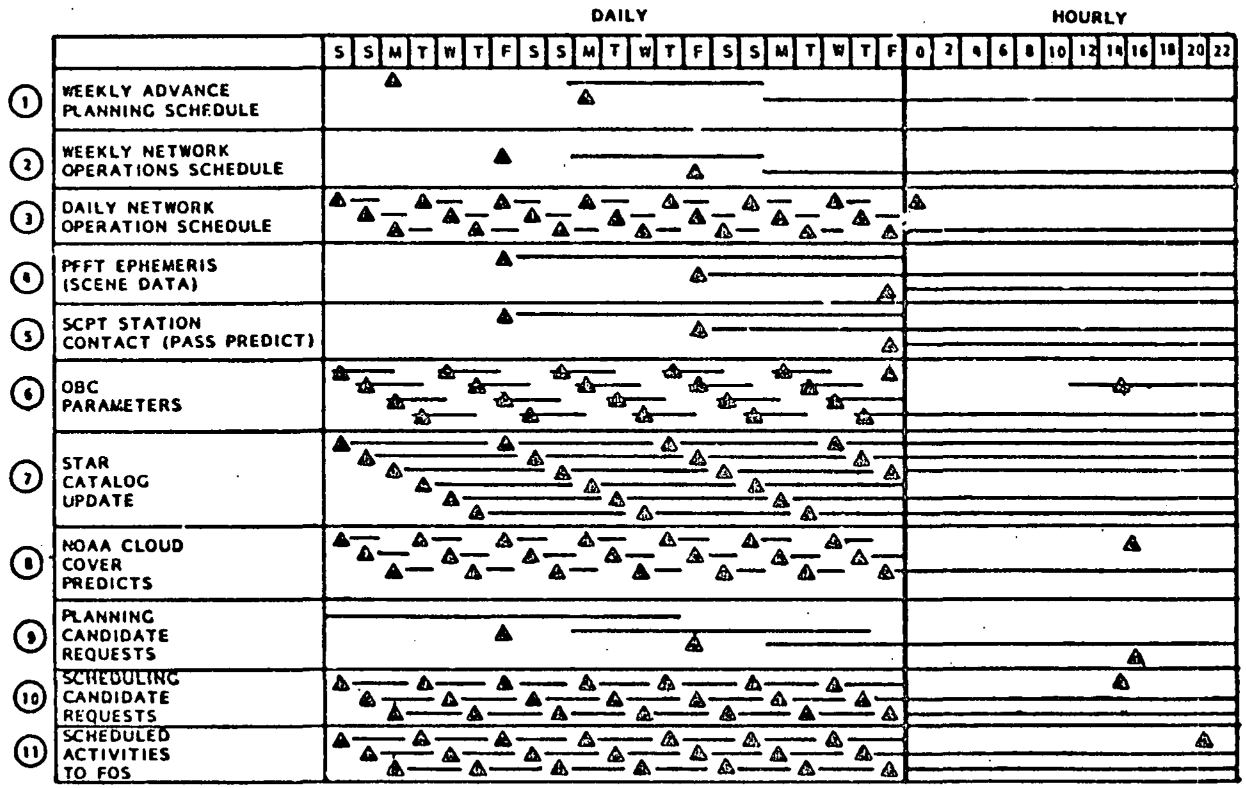
c. It has a rudimentary conflict avoidance capability, i.e., it will not schedule simultaneous data operations that conflict with data system capabilities.

d. Where mission support activities are flexible with respect to the time of data transmission, the OLS can shift a support request within a station contact period or to another station contact.

A subsequent run of the NCCS link schedule handler (LSH) identifies where additional support is needed. The flight operations planner will activate OLS with respect to the time period provided by the NOCC weekly advance planning schedule. Additional link support needed will be passed to the NCCS where the flight operations planner will prepare the indicated specific link support requests and transmit them by teletype to the NOCC. The NOCC will respond with acceptance or rejection. These responses will be typed into the NCCS and made available to the FSS. The total of activities scheduled into the contact periods made available by the NOCC, plus activities scheduled for Foreign Ground Stations, becomes the advance plan. All the requests remain in the request area of the data base for possible action should conditions change, e.g., a lower priority payload request might be substituted for a higher if the latter is rejected in daily scheduling by limits in predicted cloud cover.

6.4.1.8 Timeline for Schedule Planning

The timeline on which schedule activities run is given in Figure 6-2. For the



(1) TTY-ISSUED BY NOCC BY 2100 GMT MONDAY

(2) TTY-ISSUED BY NOCC BY 1700 GMT FRIDAY

(3) TTY-ISSUED BY NOCC BY 0500 GMT DAILY

(4) TAPE FROM OCC DELIVERED FRIDAY BY 2100 GMT FOR 14 DAYS STARTING AT 0:00 GMT

(5) TAPE-DELIVERED FRIDAY BY 1300 GMT FOR 14 DAYS STARTING AT 0:00 GMT

(6) TAPE-DELIVERED DAILY BY 1500 GMT BY OCC FOR 60 HOURS STARTING AT 1300

(7) COMPUTED DAILY FOR 5 DAY PERIOD

(8) FAX - DELIVERED DAILY BY 1900 GMT FOR 24 HOURS STARTING AT ~0300 - 0400 GMT

(9) TAPE OR DECNET DELIVERED FRIDAY 16:00 GMT FOR 7-14 DAYS STARTING 0:00 MONDAY

(10) DECNET FROM MMF DELIVERED DAILY AT 15:00 GMT FOR 48 HOURS STARTING ~0300 - 0400 GMT

(11) DECNET-TRANSFERRED DAILY AT 21:00 GMT FOR 48 HOURS STARTING ~0300 - 0400 GMT

Figure 6-2. Schedule Timeline

flight operations planner a typical planning period would proceed along the following calendar:

a. Three weeks prior to the event period, check whether the generic schedule holds and submit any changes to the NOCC.

b. On Tuesday, 11 days prior to event week, update the schedule support data base with the OCG provided ephemeris and station contact predictions inputs.

c. On Monday, one week prior to event week, run the OLS and enter the weekly advance planning schedule from NOCC. Run the LSH to identify additional link support needed. Submit additional requests to NOCC. Generate an advanced schedule for foreign ground stations with NASA recorders and send via TTY.

The flight operations planner will perform these tasks during periods when he is not engaged in the preparation of the daily schedule. Second and third shift operations will handle most of these duties. The nominal time required for each step of the advance planning process is (TBD). Program run times are given in paragraph 6.4.4.

6.4.1.9 Personnel

Primary responsibility for advance scheduling lies with the flight operations planner. He is cognizant of any changes in the level or conditions of payload operations or in new requirements for mission support. The flight operations planner will be assisted by couriers and computer operators in the following operations:

a. Acquisition of tapes and hardcopy from the OCG.

b. Insertion of taped data into the data bases.

c. Transcription of schedule requests as presented in the NCCS display to teletype messages for transmission to the NOCC.

d. Transcription of NOCC schedules from teletype printouts to NCCS computer inputs.

e. Transcription of advance schedules for foreign ground stations with NASA recorders to teletype messages.

6.4.2 DAILY SCHEDULING

At about 0800 local time the daily scheduling process begins. The pacing item for this is the receipt of the cloud cover data transmitted via phone facsimile to the CSF. The daily scheduling process should be completed by about 1800 local time to provide sufficient lead time for the first events of the schedule day which starts at 0300-0430 GMT. The daily scheduling process recompiles the schedule, screens the payload requests against observational constraints, prioritizes the conflicting requests, assures compatibility and proper sequencing of activities, and fits them into the previously reserved link support timelines.

6.4.2.1 Steps in Producing the Daily Schedule

6.4.2.1.1 Data Base Entries

a. At 1000 Local on the Thursday preceding the day being scheduled, a courier picks up OCG outputs that include:

1. The predicted fit ephemeris tape, which supplies data used in predicting scene center times, longitude and start time of orbit (ascending node), and sun elevation and azimuth at scene center. These files are used by the mission scheduling packages and by the payload evaluation subsystem.
2. The flight segment pass prediction tape which is used in link scheduling and payload requests screening.
3. Printouts of the STDN pass predictions, TOPSAS orbital plots, TOPSAS ground trace predicts, and pass summary predicts which are aids to scheduling and planning.

   Details of their accuracy, the periods they cover, and their interrelationships are contained in the GS/OCG ICD, GES 10140. At the direction of the flight operations planner a computer operator will enter these tapes into the FSS data base using the scheduling support package (SSP). The operation of the SSP is supplied in paragraph 6.4.4. This task will be completed prior to the inception of Friday's daily scheduling. Examples of the pass predictions and orbital plots were provided in Tables 6-2 and 6-3.

b. At 0800 local time the daily scheduling process begins, when the flight operations planner checks to see whether the resource capabilities files need to be modified. These files contain parameters describing:

FILE	INFORMATION SOURCE
Link capabilities	Flight Segment Engineer/NOCC
Mission support request requirements	Flight Segment Engineer
Payload request requirements	MMF/Project Office
Spacecraft capabilities	Flight Segment Engineer
Spacecraft constraints	Flight Analyst
Station capabilities	NOCC

Information regarding these parameters are made available by the cognizant parties. The flight operations planner inserts changes by program operations described in paragraph 6.4.4.

c. At 1000 local a courier delivers from the OCG the Landsat-D ephemeris representation tape (ERT). This tape is ingested to produce an uplink file of ephemeris data for the OBC. (At a later date the tape will also contain TDRS ephemeris data from which antenna pointing vectors will be derived). The input tape format and content is defined in the GS/OCG ICD, GES 10140. The uplinked ephemeris data is used in the OBC for position and attitude determination.

d. The star catalog program is activated by the flight operations planner to prepare a list of star coordinates and intensities to be used by the FS's Fixed Head Star Tracker (FHST) for attitude determination. This program extracts from a master catalog a file of 55 stars of suitable intensity and spacing along the swaths to be covered during the next five days. This data is updated, converted to OBC uplink format, and placed into one file for later transmission to the FS and in another file for entry to the TSIM. The operation of the star catalog program is described in paragraph 6.4.4.

e. Approximately 24 hours before the start of the day to which it applies the NOCC will transmit via TTY a daily network operations schedule. Table 6-5 is an example of this schedule. It covers 24 hours. This message is received in the NCCS where the flight operations planner carries out a process of reconciling the NOCC schedule with the schedule compiled in the NCCS from previously granted GSTDN support. (The method of performing the schedule comparison is TBD). Discrepancies between the schedules will be resolved by telephone conversation between the flight operations planner and the NOCC operator. Where necessary, specific schedule requests will be resubmitted to the NOCC for inclusion in the daily network operations schedule. This process of reconciliation should be completed by 1200 local of the day preceding the scheduled events.

f. GPS support data is prepared next for uplink to the FS. The types of GPS data uplinked, the source of the data, and how often it is uplinked is as follows:

DATA TYPE	SOURCE	TIME
Landsat-D Host Vehicle Almanac	IIRV-TWX from OCG	As required
Pole Position Coordinates	Naval Observatory Report	Daily
OBC/GPS Parameters	F/S Analyst	Daily
NDS Almanac	Naval Surface Weapons Center	As required

Table 6-5. Daily Network Operations Schedule Format

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RR GOPS GLND
DE GHBS 001
20/1155Z
INFO GOPS

FM NOCC
TO LNDST-4 SCHEDULER

811123 GENERAL SCHEDULE LANDSAT-4

SUPIDEN	STA	START	AOS	LOS	STOP	RTMODE	COMMENTS
B1294MS	BLT	0022	0046	0100	0102	RRXXXX	O/N 00124 PDF-B,D,2W,SEQ
			GULA				
			0026	0112	01 VOIC		GLND
			0026	0112	01 WMDX	0040KB	GLND
B1294	ULA	0034	0059	0113	0115	AFXXXX	O/N 00124
			PDF-B,C,SEQ GBLT				
			0026	0115	01 VOIC		GLND
			0026	0115	01 WMDX	000KB	GLND
			0026	0115	01 SMIB		GLND
B1294	BLT	0201	0226	0243	0245	RRXXXX	O/N 00125 PDF-B,D,2W,SEQ GULA
			0206	0255	01 VOIC		GLND
			0206	0255	01 WMDX	0040KB	GLND
B1294	ULA	0214	0239	0254	0256	AFXXXX	O/N 00125
			PDF-B,C, SEQ GBLT				
			0206	0256	01 VOIC		GLND
			0206	0256	01 WMDX	000KB	GLND
			0206	0256	01 SMIB		GLND
B1294	GDS	0344	0409	0426	0428	AAXXX	O/N 00126 PDF-B,2W,SEQ GULA
			0349	0437	01 VOIC		GLND
			0349	0437	01 WMDX	0008KB	GLND
B1294	ULA	0354	0419	0435	0437	AFXXXX	O/N 00126
			PDF-B,C,SEQ GGDS				
			0349	0437	01 VOIC		GLND
			0349	0437	01 WMDX	0040KB	GLND
B1294PB	ULA	0433			0455	XXIGXX	O/N 00126
			0435	0453	01 VOIC		GLND
			0435	0453	01 SMIB	000KB	GLND

All this data is inserted manually. The NDS almanac is available on punched cards and the rest from tables. Processes within the schedule support package convert this data to appropriate form for use by the command load converter. The computer program operations required for this are described in paragraph 6.4.4.

g. Cloud cover predictions will be received in the CSF between 1300 and 1400 local time. They are received by phone facsimile. An operator manually enters this data via the cloud cover process of the scheduling support as described in paragraph 6.4.4. The input is in the form of coded values for the predicted percent of cloud cover along the paths and rows to be covered in the 24-hour scheduling period. The predicted cloud cover file is used in the next step of the daily schedule process which is that of screening payload candidates.

6.4.2.1.2 Ingest Payload Requests from MMF

Payload candidate requests are transferred from the MMF to the CSF as described in paragraph 6.4.1.5 except that the requests are flagged for scheduling rather than planning.

6.4.2.1.3 Run Screen Candidate Requests Software

Payload candidate requests are checked to see whether the percent of predicted cloud cover exceeds, or the sun elevation angle falls below, the scene requestor's criteria. The flight operations planner executes this program by procedures described in paragraph 6.4.4. Rejection of candidates feeds back to

the MMF by way of deletion files generated following scheduling. NOTE: The rejection of some candidates may make link time available for rival payload requests with less restrictive screening criteria.

6.4.2.1.4 Schedule Mission Activities Software

This is the key step in the scheduling process. Using schedule mission activities software, the flight operations planner prepares the detailed sequence of activities that constitute the next days schedule - activities that begin after 0300 GMT. The schedule may be extended over 48 hours for contingency reasons, although cloud cover data is not available for the latter 24 hours. The schedule mission activities process compiles a list of payload and mission support activities that are mutually compatible and within the performance range of the FS and supporting links. The schedule mission activities process takes account of the following factors.

a. Priorities - generally in the order of (1) time critical mission support activities, (2) payload activities by priority, (3) STF management activities and (4) time discretionary activities.

b. Availability of GSTDN support - by priority the activities are fitted into the previously granted link contact periods.

c. Availability of FS links - spacecraft data rates, antennas, transmitter frequencies and transmitter power modes are checked for availability.

d. MSS Mode/gain conflicts - conflicts are recognized and resolved, normally in accord with priorities provided by MMF.

e. Payload correction data for thematic mapper (TM) - PCD must be taken with TM scenes and a telemetry link must be scheduled.

f. Switching time for MSS mode/gain - Parametrically defined time for switching between MSS mode/gain must be factored into the schedule.

g. Flywheeling - When the interval between scenes is less than desirable for switching to and from standby status, then a flywheel window is allowed in the schedule. This minimum interval will be specified in the data base.

h. Switching of link configurations - The schedule must include all the link reconfigurations that will occur in GSTDN support as data rates and data channels change.

i. Tracking and ranging periods - Schedule range and range rate tracking at times that meet the orbit computation requirements of the OCC.

j. Duty cycles - A check is made against the limits of the sensor's and transmitter's duty cycles. These limits will be supplied by Flight Operations.

k. Scheduling of the standard tape recorder (STR) - Playback of the STR's will be done with the aim of providing continuous coverage of the narrow band telemetry signal.

l. Power management of the FS - The power budget for the FS, as specified by flight operations planning, is factored into the schedule. This includes taking into account power deficiencies that occur when the FS is in shadow.

The flight operations planner will interact with the schedule mission activities program to resolve problems beyond the capabilities of the software or to override scheduling restrictions that are within the latitude of his authority. When mandatory time discretionary events cannot be scheduled in the required time window, payload requests will be pre-empted to create the necessary time. This will be done in accordance with priorities and the appropriate changes in link and FS schedules will be forwarded to the NOCC and to Flight Operations and the command processing subsystem (CPS). The flight operations planner will also seek additional GSTDN support needed to accommodate mission requirements that were not compatible within the confirmed link support timelines. He will do this through the NCCS.

The flight operations planner activates the schedule mission activities software by procedures given in paragraph 6.4.4.

6.4.2.1.5 Run Generate Mission Activities (GMA) Software

The GMA takes the output of the schedule mission activities software and separates out a high level, time ordered list of events to be performed by the FS. The output of this process will be passed to the CPS for conversion to the actual commands to be executed.

The GMA composes a sequence of actions for the FS modules that strikes a balance between minimizing module on-time and minimizing the number of state changes in the FS instruments and communications equipment. The GMA does this by reference to an activity decision table.

The flight operations planner activates the GMA according to procedures outlined in paragraph 6.4.4.

6.4.2.1.6 Generate Payload Acquisition Deletes

The FSS provides candidate request deletion lists to the MMF identifying requests rejected in the screening or activities scheduling process. The flight operations planner will prepare these files, after the daily scheduling process is completed, in accordance with procedures described in paragraph 6.4.4.

6.4.2.1.7 Release Link Support

After completing the GMA process, the flight operations planner compares the resultant schedule to the schedule of confirmed link support that he started with. By TTY message to the NOCC, GSTDN support not required is released.

6.4.2.1.8 Schedule Data Reception at the Foreign Ground Stations (FGS)

The FSS generates schedules for the foreign ground stations in response to their requests for image data. These requests are transmitted to the FSS from the MMF in the same way other payload requests are handled. Feedback to FGSs is by TTY through Nascom. The schedules are as described in GES 10091, the GS/PO ICD. The daily schedule is to be transmitted to the FGS at least four hours prior to the start of the period covered by the schedule. Those stations with NASA wideband video tape recorders will be supplied the same schedule information provided to GSTDN stations.

6.4.2.1.9 Schedule Data Reception at the Transportable Ground Station (TGS)

The same routines that schedule the GSTDN and FGSs also schedules the TGS. The

schedule will be transmitted to the TGS in the same TTY format as provided to the FGSs and in the same time frame.

6.4.2.1.10 Preparation of Pass Briefing Messages (PBM)

The NCCS generates pass briefing messages for each scheduled GSTDN real-time or recorder playback support period. Samples of the two types of PBMs are exhibited in Tables 6-6 and 6-7. These PBMs should be teletyped to the stations five hours in advance of the contact period. The program operations required to produce the PBMs are described in paragraph 6.4.4.

6.4.2.1.11 Schedule DOMSAT for Video Recorder Playback

The flight operations planner will schedule Domsat time for the playback of wideband video data. He will also schedule adequate generic Domsat support for transmitting processed image data to the EROS Data Center.

6.4.2.1.12 Schedule DRRTS Data Reception

The FSS provides DRRTS with a daily schedule of image data reception. The information forwarded includes:

a. Copies of schedules sent to FGSs with NASA recorders

b. The TGS schedule for the reception of video data - which DRRTS records in real time

c. Schedules for image data to be transmitted from GSTDN via Domsat to DIF.

6.4.2.2 Dynamic Rescheduling

After completion of the daily scheduling process, additions and changes may be

Table 6-6. Pass Briefing Message (PBM) Format

ORIGINAL PAGE IS
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PP G B L T GNOC
DE GLND
22/1620 Z
INFO BNOC
PBM: B1294MS LNDST-4

BLT LNDST-4 ORBIT NR. 00124

AOS 327/004651Z LOS 327/010018Z

TELEMETRY

	ON	OFF	PDF	DEST
MISSION	AOSZ	LOS Z	B	106
OBCDUMP	N/A Z	N/A Z		
PCD	004830 Z	005545 Z	D	306
STR DUMP	N/A	N/A		

WIDEBAND RECORDERS

	TAPE NO.	ON	OFF
MSS	MB432701	004800Z	005530Z
TM	N/A		

HANDOVER

TO	ULA	005930Z

REMARKS

22/1622Z NOV 81

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Table 6-7. PBM Format for STR Playback

```
PP GULA BNOC
DE GLND
22/1625
INFO GNOC

PBM:   B1294PB  LNDST-4

ULA LNDST-4 ORBIT NR. 00126

STR DUMP P/B

PLAYBACK:    START      STOP       PDF      DEST
             043500Z    045300Z    G        046

REMARKS:     NONE

22/1627Z     NOV 81
```

made in the schedule by a dynamic rescheduling process. To accomplish dynamic rescheduling, dynamic payload requests are entered using the manual mode of the payload request process. Dynamic mission support requests are entered using the manual mode of mission support request process. Changes in available link support are entered using the link schedule handler. Dynamic rescheduling is followed by a repetition of the scheduling process over an abbreviated time interval determined by the operator. The program operations required for dynamic rescheduling are described in paragraph 6.4.4. For payload candidates scheduled manually in the CSF, feedback to the MMF is required for the subsequent accounting processes.

6.4.2.3 Timeline for the Daily Scheduling Process

The daily scheduling process is constrained by the delivery time of the predicted cloud data at 1300-1400 local time and the 0300-0430 GMT start time for the event day. The screening process, the schedule mission activities and the generate mission activities and possible readjustments of GSTDN support must await the entry of the cloud cover data. A four hour time lead is desired in the dissemination of pass briefing messages and other link scheduling information. Consequently, 1800 local is the target time for completing the daily scheduling process. Since this is an active period for flight operations, the daily scheduling process will have to be worked around the real-time commitments.

The timeline for the daily scheduling process is shown in Figure 6-3.

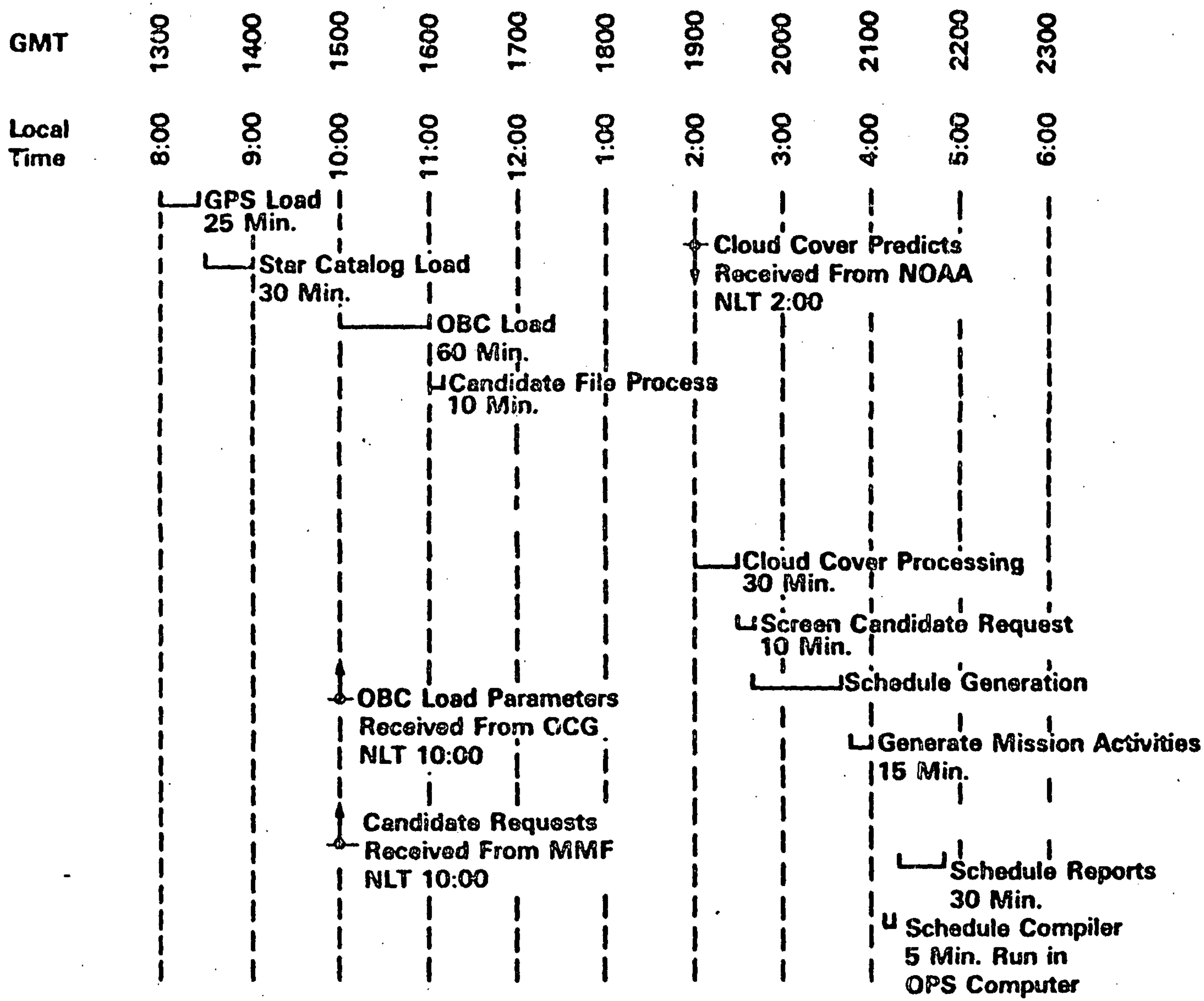

Figure 6-3. Daily Scheduling Timeline

6.4.2.4 Magnitude of the Daily Scheduling Task

a. Approximately 20 contacts are scheduled in the full daily schedule. However, there will normally be a few changes in the 20 contacts carried over from the previous day's scheduling. Actual scheduling may be broken down into several shorter time segments, as short as one contact.

From the daily scheduling process several schedule reports are produced, each tailored to a particular system's view of the same basic sequence of events. The schedules are:

1. The GSTDN schedule expressed in the daily schedule and pass briefing messages
2. The flight operations schedule, or activity list, as created by the mission activities generator and passed to the command processing subsystem
3. Ground Segment activities and event markers
4. A derivative of the flight operations schedule used in acquisition accounting.

b. Within each contact there are normally configuration changes. A typical contact may have several link configuration changes, and the FS configuration changes will be more numerous.

6.4.2.5 Personnel

The flight operations planner is responsible for generating the schedules cited in paragraph 6.4.2.4 (a.). He will be assisted by couriers and computer

operators in the same operations cited in paragraph 6.4.1.7 of the advance planning function.

6.4.3 POST-PASS OPERATIONS

Attached to the flight scheduling subsystem (FSS) are post-pass functions that (1) ascertain the success of scheduled operations and (2) prepare telemetry data packets for transmission to the MMF and subsequent use in processing image data. The software that performs these functions constitutes the acquisition analysis package (AAP). The AAP is structured into three main components:

a. Flight Segment Events Analysis Process (paragraph 6.4.4)

b. Ancillary Data Processing Process (paragraph 6.4.4)

c. Payload Acquisition Accounting Process (paragraph 6.4.4)

The details of program operation are described in the sections named in the parentheses. Component (a.) examines selected FS event data and reports what events actually occurred during a contact period. It also takes account of link performance inputs to report the status of data acquisition. Part of the output of the FS events analysis process is used in performance evaluation and part is used in payload acquisition accounting.

Ancillary data processing receives selected MSS and TM data and prepares data packets and data packet directories for use in payload correction.

Payload acquisition accounting looks at the data packet directories and the payload events report and compares the indicated results to the scheduled payload requests. This comparison produces a payload events status file for the MMF to use in scheduling image processing.

6.4.3.1 FS Events Anlaysis

Acquisition analysis begins with the arrival in the CSF of telemetry data that covers a period when payload data was scheduled for acquisition. This data may reach the CSF in real-time, as playback data from the standard tape recorder (STR) or as playback data from a ground station that was unable to communicate the telemetry in real-time. The acquisition analysis is to be completed within 90 minutes of the arrival, in the Image Generation Facility (IGF), of the associated wideband video data. In CSF, the telemetry processing subsystem (TPS) extracts, from the telemetry data, selected data that contain the key indicators of MSS payload system performance. The communications control subsystem (CCS) captures the TM PCD telemetry.

At the initiation of the ground controller, the FS events analysis process accesses the data base of the mission scheduling package for two files needed in its analysis:

a. Scheduled activities list
b. On-pass events file.

The FS events analysis process compares these scheduled activities to the actual events as indicated in the on-pass events file. Network events are captured in the same events file. From this comparison four reports emerge:

a. Mission support analysis for mission management
b. STR analysis for the performance evaluation subsystem and mission management

c. Payload events profile

d. Network events file.

6.4.3.2 Ancillary Data Processing

Next, the ground controller activates the ancillary data processing process. This process presupposes the existence of selected telemetry data prepared in the TPS (for MSS) or the CCS (for TM). Telemetry data required for subsequent MSS processing is made available to ancillary data processing in a file. Telemetry data required for TM processing is made available as a CCT.

Ancillary data processing produces MSS data packets and associated packet directories, which are made available for Decnet transfer to the MMF. The packet directories are also made available to the payload acquisition accounting process. Likewise, TM payload correction data (PCD) packets and directories are prepared for transfer to MMF and the directories stored for acquisition accounting. The TM PCD packets are transferred to MMF on a CCT. The ancillary data process, in addition to some data format changes, also sizes the ancillary data packets to appropriately cover the requested scene data. It does this by reference to the mission activities schedule resident in the FSS data base.

6.4.3.3 Payload Acquisition Accounting

After ancillary data processing the acquisition analysis procedure is ready for the last step in fulfilling the normal responsibilities of the CSF to the scheduling and accounting functions. The following files are now available to payload acquisition accounting:

a. MSS data packet directory

b. TM packet directory

c. Payload events profile

d. Mission activities schedule from MSP data base.

The flight operations planner activates payload acquisition accounting, which determines the final status of all scheduled payload requests by checking whether the required ancillary data exists and whether the events profile indicates that image data was generated and transmitted by the FS. The output of this process is a payload events status file and a payload acquisition accounting report. The payload events status file, containing a request by request accounting, with adjunct information (e.g., recording site), is available for Decnet transfer to the MMF.

The payload acquisition accounting report is a printout of summary data including:

a. Number of scheduled activities processed

b. Number of successful payload acquisitions

c. Number of unsuccessful payload acquisitions

d. Number of erroneous data records encountered.

6.4.3.4 Timeline for Acquisition Analysis

Acquisition analysis is to be completed within 90 minutes of the reception of the wideband video data in DRRTS. Normally, this will be some time after the reception of the telemetry data in the CSF.

6.4.3.5 Personnel

Acquisition analysis will be the responsibility of the ground controller.

6.4.4 COMPUTER PROGRAM OPERATION

The scheduling function is carried out through the repeated use of 16 computer processes. These processes are subordinate to three distinct subsystems, as depicted in Figure 6-4. Candidate Request Generation is a process within the flight management subsystem of the MMF. The link schedule handler is a process within the Network Control Center Subsystem (NCCS) of the CSF. The other fourteen computer programs are divided into three packages within the flight scheduling subsystem (FSS) of the CSF. The five processes constituting the scheduling support package (CSF-PKG-1010) prepare standard data packages required for other FSS processes. The six processes within the mission scheduling package (CSF-PKG-1011) ascertain what payload and mission support activities are desired, what communication link and FS resources are available, and, within priority constraints, prepares a detailed schedule of flight and communication events. The three processes of the acquisition analysis package (CSF-PKG-1012) determine, from selected telemetry data and network feedback, the disposition of scheduled payload activities and pass this information, along with ancillary image processing data extracted from telemetry, to the MMF.

6.4.4.1 Data Base Initialization

Data base initialization is not a regularly repeated activity and will not be

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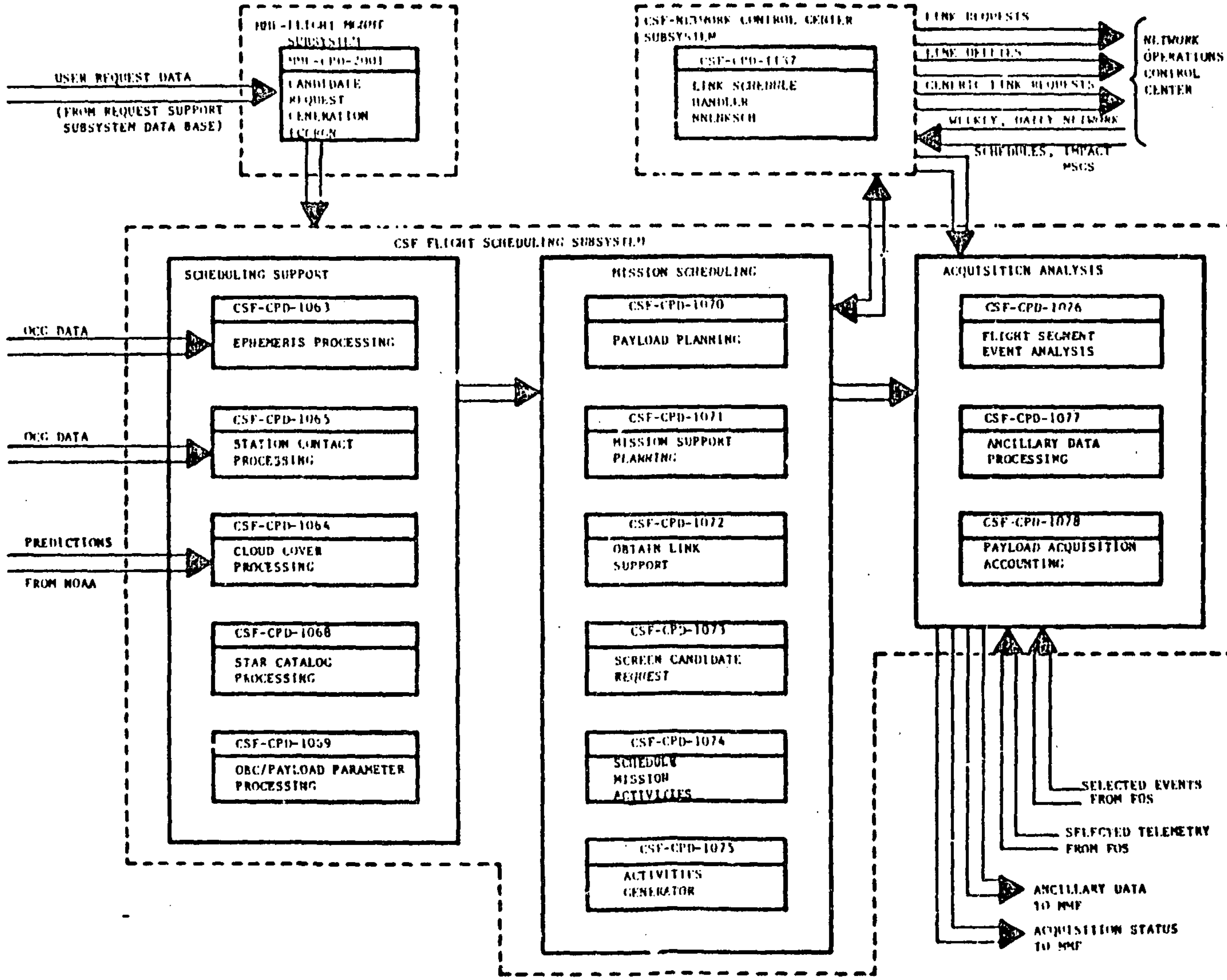

Figure 6-4. Computer Programs for Spacecraft Scheduling

described here. It is described in the CSF Data Design Specification, LSD-CSF-DDS-0001. Relatively fixed elements of the FSS data base are:

a. WRS Reference Path (WRSDB)

b. CSF-MMF file sequence numbers (ACQSPEC, MSSSEQ, PLSSEQ, PCDSEQ)

c. MSS and TM ancillary data packet definition (MSSDEF, PCDDEF)

d. SEED Data Base Management System areas (REQUESTS.DB, TRANSLAT.DB, RESOURCE.DB, PASSPRED.DB, NCCSUPT.DB, SCENEDAT.DB, CMDACT.DB, COMMANDS.DB, TLMTRY.DB and PCDTLM.DB).

When changes are required they will normally be made by the data base administrator.

6.4.4.2 Start and Stop Directives for FSS Processes

After logging in, the FSS environment is entered using "$SELECT LS4SCHED" and "$COIL ON FSS". "& COIL OFF" leaves the COIL environment and returns to DCL.

6.4.4.3 Scheduling Support Packages

6.4.4.3.1 Ephemeris Processing (CSF-CPD-1063) - MSPREPHM

The predicted fit ephemeris tape (PFET) will be ready for pickup from the OCG before 1500 GMT on Thursday of each week. New PFETs are also supplied after orbit adjust maneuvers. They normally cover a period of 14 days, starting at 0000 GMT on the day prior to its delivery. PFET data is used in the FSS for predicting scene center times and sun angles at scene center.

The ephemeris tape header is validated for correctness before processing.

Default processing parameters are displayed to the operator console, if requested, and the operator is given an opportunity to approve or override them. Optional validation compares scene center times computed from the information on the new PFET with corresponding ones stored by processing of a previous PFET. The operator may set the limits on this time comparison.

After validation the process rewinds the PFET to the beginning of the processing span. The process then:

a. Calculates scene center time for each WRS path and row within the processing span
b. Interpolates sun elevation and sun azimuth for each path and row
c. Converts sun angle from radians to degrees before storing the information into scene data record of data base
d. Stores the scene center times of the first row (row 184) of the earliest orbit and the last row (row 183) of the latest completed orbit, and the corresponding orbit numbers in the scene inventory record of data base to provide restart capability after system crash
e. Displays scene center times at intervals to show process continuity
f. At option, writes the path, row, center time, and sun angles of each processed scene to a file which, at the completion of the process, the operator may examine via CRT or direct to be printed
g. At the conclusion of the run, displays a summary report that gives a measure of the activity and indicates a termination of the run.

Interfaces for ephemeris processing are:

a. PFET received from OCG

b. CSF data base to update scene data and scene inventory record

c. Operator through the OCD.

Interactions with the operator are shown in the following annotated dialog between the operator and the ephemeris process.

DIRECTIVE NAME: EPHEMERIS

SHORT FORM: (NONE)

PURPOSE: This directive and associated data entries are used in invoking the ephemeris process and in specifying process option parameters.

FORMAT: EPHEMERIS sc_id[,beg_time,end_time]

where: sc_id - spacecraft id (LS4 or LS5)
beg_time - process start time (yy:ddd:hh:mm)
end_time - process stop time (yy:ddd:hh:mm)

e.g.: EPHEM LS4,81:266:23:00,81:267:05:30

NOTE: All digits of any date/time field entered are required; e.g., 81:121:17:23.

Do you want to review process parameters (yes,no)

YES:

A dialog ensues whereupon one or more of these process option parameters may be reviewed:

1 Valid record interval (hours) <VLD_INT>
2 Number of successes required for data validation <NUM_SUCCESS>
3 Scene center time validation tolerance (sec) <SCT_TOLR>
4 Process display interval <DIS_INT>
5 Process start time <BEG_TIME>
6 Process stop time <END_TIME>
0 To end review dialog

PARAMETER RANGES:

1	Validation record interval	5-30
2	Successful record interval	2-10
3	Scene center time tolerance interval	3-25
4	Display interval	5-30
5	mm/dd/yy:hh:mm	
6	mm/dd/yy:hh:mm	

Do you want to validate tape data? [yes,no]

Do you want to output data to a file [yes or no]

If yes, data is written to logical name EPHEM (if undefined, primary directory EPHEM.DAT is used). This file is quite long and is not automatically printed.

6.4.4.3.2 Station Contacts Process (CSF-CPD-1065) - MSSTNCNT

The station contacts processing tape (SCPT), or "Pass Predictions Tape" as it is identified in its header, will be ready for pickup from the OCG prior to 1500 GMT on Thursday of each week. New SCPTs are also supplied after orbit maneuvers. They normally cover a period of 14 days starting at 0000 hours GMT on the day preceding delivery. SCPT data is used in the FSS for obtaining link support and for estimating times of signal acquisition (AOS) and signal loss (LOS). The content of the SCPT is shown in paragraph 6.4.1.3 in Table 6-2. The station contacts process translates the SCPT from IBM format to VAX format, validates, at operator option, the SCPT and selectively writes the following information in the CSF data base:

a. Spacecraft ID
b. Station ID
c. Orbit number
d. Event time
e. Antenna X-angle
f. Antenna Y-angle
g. Spacecraft range
h. Sun condition
i. Event code
j. Tally of stored passes.

Event codes are defined on page 5 of the sample printout from the SCPT shown in Table 6-3. They are such items as AOS, maximum elevation, point of closest approach and LOS.

Validation of the SCPT checks the time span of the SCPT against an operator input time span. The station contact process may also be directed to compare, within a specified tolerance, AOS times on the tape against data entered from an earlier SCPT.

Interfaces for the station contacts process are:

a. SCPT received from OCG
b. CSF data base to update pass predictions and the pass prediction inventory record
c. Operator via the OCD

Interactions with the operator are shown in the following annotated dialog between the operator and the station contacts process.

DIRECTIVE NAME: STATIONCONTACT

SHORT FORM: STATION

PURPOSE: This directive and associated data entries are used in invoking the station contact process and in specifying process option parameters.

FORMAT: STATION sc_id[,beg_time,end_time]

where: sc_id - spacecraft id (LS4 or LS5)
beg_time - process start time (yy:ddd:hh:mm)
end_time - process stop time (yy:ddd:hh:mm)

e.g.: STATION LS4,81:266:23:00:00,81:267:05:30:45

NOTE: All digits of any date/time field entered are required; e.g., 81:121:17:23:10.

Do you want to review process parameters (yes,no)

A dialog ensues whereupon one or more of these process option parameters may be reviewed:

1	Valid record interval (hours) <VLD_INT>
2	Number of successes required for data validation <NUM_SUCCESS>
3	Scene center time validation tolerance (sec) <STN_TOL>
4	Process display interval <DIS_INT>
5	Process start time <BEG_TIME>
6	Process stop time <END_TIME>
7	Process checkpoint interval <CKPT_INT>
0	End review dialog

PARAMETER RANGES:

Validation record interval	5-30
Successful interval	2-10
Station time tolerance interval	3-25
Display interval	5-30
Checkpoint interval	5-25

Do you want to validate tape data? [yes,no]

6.4.4.3.3 Star Catalog Process (CSF-CPL-1068) - MSSTARCAT

The star catalog process is used in the FSS to prepare a file of selected star catalog data for uplinking to the FS. In the FS this data will be used in conjunction with star tracker data to estimate corrections for the attitude control system. This uplink file, together with another file for the test and simulation subsystem (TSIM) is prepared daily. The star catalog process incorporates criteria that will select a minimal number of stars of appropriate magnitude that will cover the viewing angles of the fixed head star trackers over a period of several days. The driver routine, MSSTARCAT, calls four functions whose tasks are:

a. SELECT - Creates, from the master star catalog of 4618 stars, an abbreviated star catalog of desired star magnitude and spacing. This file is generated infrequently.

b. SWATH - Selects, from the abbreviated catalog created by the SELECT option, a smaller catalog called the "active star catalog". This file is used by the TSIM. Selection criteria include such factors as angle between xy plane and line of sight, angle between star tracker's lines of sight, inclination angle or orbit, angle between x inertia and longitude, maximum detectable star magnitude, and swath angle.

c. UPLINK - Creates, from the catalog selected by the SELECT option, a file of star data to be uplinked to the FS. The selection criteria for this file include those used by the SWATH option. The uplink file consists of time (relative to flight software) to begin using the star catalog data, number of stars in the uplinked table, earth centered

inertial components of the star line of sight, orbit angle for the star, star catalog available flag, and star intensity upper and lower limits.

d. SCNGEN - Prepares a scenario file for use by TSIM. Processes the active star catalog created by the SWATH option to produce a file which consists of azimuth, elevation and magnitude of stars.

Interfaces for star catalog process are:

a. Load file converter of the command processing subsystem

b. Operator through the OCD.

Interactions with the operator are shown in the following annotated dialog between the operator and the star catalog process:

```
ACTIVATE COIL DIRECTIVE:  MSSTRCAT
     START:  STARTLINK <START> <END>
AFTER INVOKING THE PROCESS, THE COMMAND PROC ENTERS THE FOLLOWING
     PARAMETERS:
     COMMAND ? LONANG,291.9119      ! LONGITUDE
     COMMAND ? STRTIM,820815.0000  ! STARCAT TIME
     COMMAND ? EXIT                 ! END REVIEW CYCLE
PROCESS DISPLAYS REVIEW AND VERIFICATION MESSAGES:
     (1)  PERFORM CRTL-P TO ISSUE SNAP TO OPERATOR'S LOG
     (2)  VERIFY STAR CATALOG COMPLETED SUCCESSFULLY
     (3)  ENTER: Y  ! PRINT REPORT ?
AT COMPLETION, PRINT SUMMARY REPORT:
     $PRINT STAR:SCUPLK.RPT
     **** END STAR CATALOG SCRIPT ****
```

6.4.4.3.4 OBC Parameter Processing (CSF-CPD-1069) - MSOBCPRM

The OBC parameter process takes data from the OBC parameter tape supplied daily by the OCG at 1500 GMT, and prepares files for uplinking to the onboard computer (OBC) and generates scenario files for TSIM. The OBC parameters tape consists of data that defines the orbit of the LSD and TDRSS spacecraft. The OBC uses this data for computing position data needed in the attitude control system and for high gain antenna pointing angles. The Landsat-D and TDRS orbits are primarily represented in Fourier power series coefficients. The contents of the OBC parameters tape is shown in Table 6-8.

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Table 6-8. OBC Parameters Tape Content

PARAMETER	FIELD SIZE	UNITS
VEHICLE IDENT (NOTE 1)	16 BYTES	MNEMONIC
EPOCH	8 BYTES	YYMMDD
	8 BYTES	HHMMSS
CARTESIAN ELEMENTS (X,Y,Z)	22 BYTES EACH	KM
(X,Y,Z)	22 BYTES EACH	KM/SEC
DATA SPAN BEGIN TIME	8 BYTES	YYMMDD
	8 BYTES	HHMMSS
DATA SPAN END TIME	8 BYTES	YYMMDD
	8 BYTES	HHMMSS
TREF	8 BYTES	YYMMDD
	8 BYTES	HHMMSS
SCALE	22 BYTES	M SEC
TDRIFT	22 BYTERS	SEC/COUNT
PRIMARY FREQ.	22 BYTES	RAD/SEC
SECONDARY FREQ.	22 BYTES	RAD/SEC
GRID INTERVAL	4 BYTES	SEC
NTMAX	4 BYTES	NUMERIC
NTD	4 BYTES	NUMERIC
FPS COEFFICIENTS (NOTE 2)	22 BYTES EACH	$MSEC^N$
RESIDUALS (NOTE 3)	22 BYTES EACH	METERS

NOTES:

(1) Landsat-D, TDRS-E, TDRS-W

(2) 42 for Landsat-D, 8 for TDRS. Fourier power series coefficients

(3) 360, for Landsat-D only

Module MSRDTAPE reads the OBC parameters tape and creates two disk files; one for Landsat-D and one for TDRS E/W. Module MSOBCPRM loads this data to memory and executes one of six functions specified by the operator. LSDRPT and MSTDRRPT calculate, respectively, velocity and position components of Landsat-D and TDRS-East and West and generate reports for all three spacecraft. LSDUPK

and TDRUPK create, respectively, uplink files of Landsat-D and TDRS OBC parameters. LSDSCN and TDRSCN generate, respectively, scenario files for TSIM.

Interfaces for the OBC parameters process are:

a. Load file converter

b. OBC parameters tape

c. Operator through the OCD.

Interactions with the operator are shown in the following annotated dialog between the operator and the OBC parameter process: (TBS)

6.4.4.3.5 Cloud Cover Process (CSF-CPD-1064) - MSCLDCVR

Cloud cover predictions will be supplied daily by the National Oceanic and Atmospheric Administration (NOAA) via phone facsimile by 1900 GMT The operator, with the assistance of the cloud cover process, will input these predictions to the CSF data base. They will be used by the FSS to screen payload requests with a cloud cover criterion. The cloud cover process performs the following tasks:

a. From the satellite identification and forecast coverage period computes the paths flown during that period

b. Prompts the operator through the input and store data process for the paths to be flown

c. Provides a "MODIFY" command to change data previously written in the data base

d. Concludes the run with a printed summary report.

Interfaces for the cloud cover process are:

a. The operator for data inputs and directives

b. The CSF data base for updating a cloud cover file.

Interactions with the operator are shown in the following annotated dialog between the operator and the cloud cover process.

DIRECTIVE NAME: CLOUDCOVER

SHORT FORM: CLOUD

PURPOSE: This directive and associated commands are used to record cloud cover predicts.

FORMAT: CLOUD sc_idforecast_period

where: sc_id - spacecraft id (LSn)
forecast_period - process forecast date (yy:ddd)

NOTE: All digits of any date/time field entered are required; e.g., 81:121.

After invoking the process, the operator is prompted to enter one or more of the following commands:

[$ENTER COMMAND; (prompt)]

SHOWPATH

Display the paths flown on the forecast day.

STORE,path_number,begin_row,end_row,predict_code

Store the predict codes in the specified path and rows.

NOTE: Predict codes are not written into database until the EXIT command is entered.

REVIEW,begin_path,end_path

Reviews predict codes entered during the current run for the path range specified.

MODIFY,path_number,begin_row,end_row,predict_code

Modify the predict codes, previously stored into the data base for the path and rows specified.

NOTE: The data base is not modified until the EXIT command is entered.

QUERY,path_number

Display predict codes previously stored in the data base for the path specified.

EXIT

Provides a successful exit from the process.

PARAMETER RANGES

Path number:	1-233
Row number:	1-248
Predict code:	1-3

Do you want to write to the data base (y or n)?

All cloud cover codes for path flown during forecast period will be stored. Unpredicted path, rows will be set to 0.

6.4.4.4 Candidate Request Generation (MMF-CPD-2001) - FCCRGN

Candidate request generation is a process within the flight management subsystem of the Mission Management Facility. This process examines the standing orders inserted in the MMF data base by the request support subsystem (RSS) (discussed in Section 5) and selects those that can potentially be served in the operator-specified scheduling period. Then it translates the standing orders into specific scene requests, stores these candidate requests in a file for transfer, via Decnet, to the FSS. Another file of these candidate requests is maintained in the MMF data base for image acquisition accounting and management information purposes.

The candidate request generation process can be run in a "scheduling" mode or in a "planning" mode. The output files are identified by this mode selection. Furthermore, this process can be run in a "dry" or "wet" mode. Only in the "wet" mode is the data base updated with the output of the candidate request generation process. Only if the transaction is "scheduling" and the data base run mode is "wet" is an entry made in the production area of the MMF data base for the candidate request.

The generate candidate request process displays for the operator the previously used time span, then displays a calculated time span for the current scheduling run. These start and stop times are calculated by adding appropriate time intervals, resident in the MMF data base, to the date displayed in the computer clock. Then the operator is prompted to substitute, if he wishes, his preferred processing time span.

The output of the generate candidate request is:

a. A candidate request file for transfer to the FSS by Decnet

b. If the run modes are "scheduling" and "wet", then a request for acquisition file is written to the production area of the MMF data base.

Interfaces fo the generate candidate request process are:

a. Operator, for data inputs and processing mode selection.

b. MMF data base, for processing parameters, for information on previous runs, for standing acquisition orders from the RSS and as recipient of a candidate request file.

c. FSS of the CSF, as recipient of the candidate request file.

Data flow is shown in Figure 6-5.

The logic of the driver program, FCCRGN, is as follows:

```
PROC
    GET MISSION, PROCESSING MODE, DATA BASE RUN MODE, DATA BASE SENSOR TYPE
    IF END OF PROCESSING IS NOT INDICATED
    THEN
        DISPLAY PREVIOUSLY-USED TIME SPAN
        DETERMINE AND DISPLAY DEFAULT PROCESSING TIME SPAN
        GET OPERATOR OVERRIDE PROCESSING TIME SPAN
        CONVERT PROCESSING TIME SPAN TO ORBIT RANGE
        DO-UNTIL ALL ORBITS IN ORBIT RANGE ARE PROCESSED
            CONVERT ORBIT NUMBER TO PATH
            REMOVE OLD PRODUCTION AREA ENTRIES FROM DATA BASE
                FOR THIS ORBIT
            GET FIRST ACQUISITION STANDING ORDER PATH/ROW ENTRY
                FOR PATH
            DO-WHILE THERE ARE STANDING ORDERS FOR THIS PATH
                CREATE CANDIDATE REQUEST DECNET FILE ENTRY
                CREATE CANDIDATE REQUEST IN DATA BASE
                GET NEXT STANDING ORDER PATH/ROW ENTRY FOR PATH
```

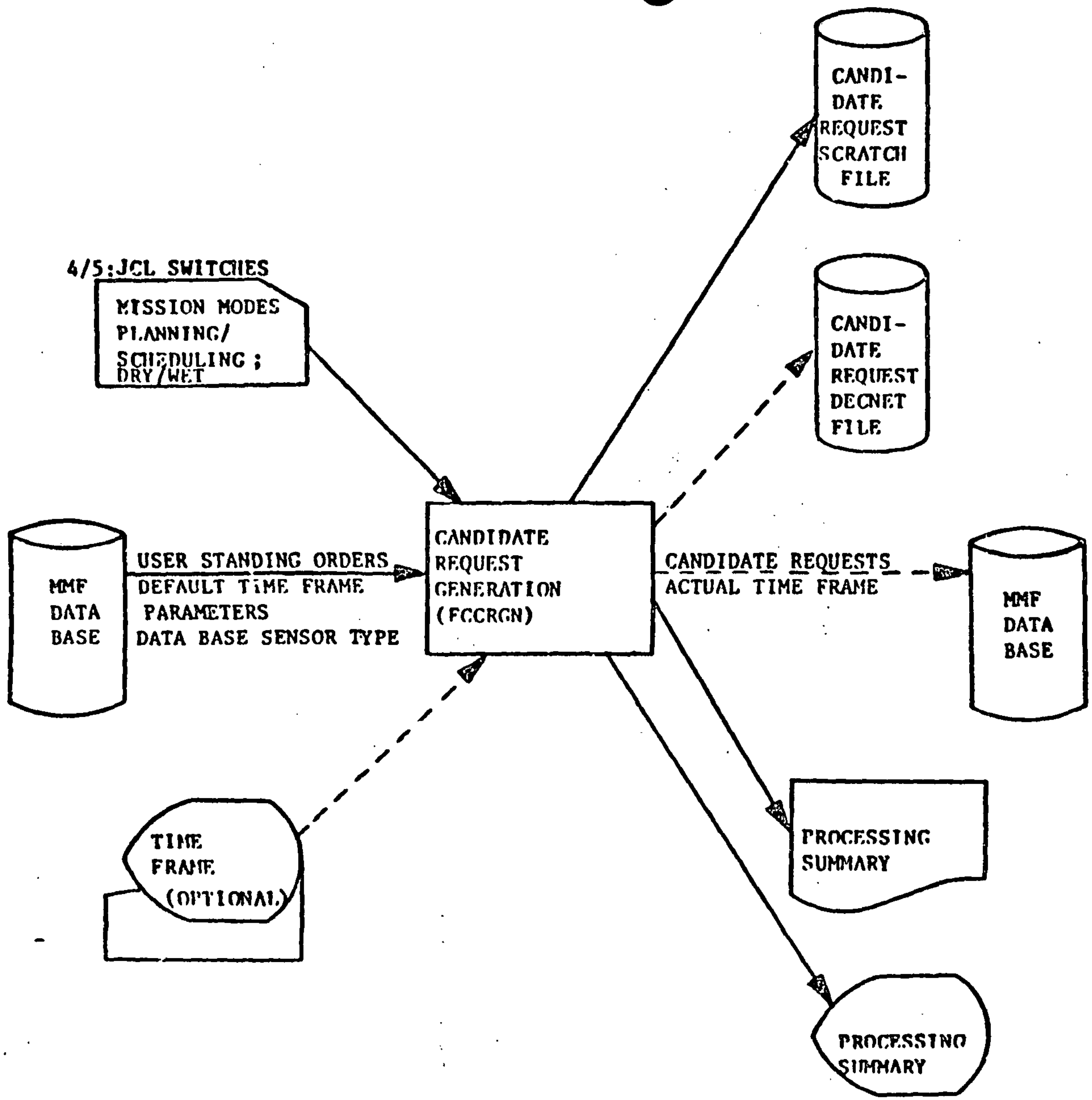


Figure 6-5. Generate Candidate Request, Data Flow

```
                GET NEXT STANDING ORDER PATH/ROW ENTRY FOR PATH
            END-DO
        END-DO
        UPDATE DATA BASE WITH TIME SPAN PROCESSED
        SORT CANDIDATE REQUEST DECNET FILE BY ORBIT, ROW, SENSOR, PRIORITY AND
            ORDER INFORMATION
    END-IF
END-PROC
```

Interactions with the operator are shown in the following annotated dialog between the operator and the candidate request process: (TBS).

6.4.4.5 Mission Scheduling Package (CSF-PKG-1011)

6.4.4.5.1 Payload Planning (CSF-CPD-1070) - MRPLREQ

The payload planning process may be run at any time, but it will normally be run weekly for planning purposes and daily for scheduling updates. Payload planning performs the following tasks:

a. Accepts and validates the candidate request files prepared in the MMF (as described in paragraph 6.4.4.4).

b. Accepts and validates candidate requests inserted manually into the FSS - called "dynamic rescheduling".

c. Detects and deletes any duplicate request.

d. Displays processing errors and default process options to operator.

e. Associates scene center times with each candidate request (where center times are taken from scene records prepared in the ephemeris process described in paragraph 6.4.4.3.1).

f. Associates support requirements with candidate request.

g. Screens candidate requests for sun angle if operator desires.

h. Links candidate requests with other candidate requests that request the same scene.

i. Stores candidate requests, by scene center time, for use in subsequent FSS processes.

j. Generates a summary report.

Validation of candidate requests includes the usual time checks; e.g., check that processing start times are earlier than stop times, and check each candidate request field against the possible range of values.

Interfaces for the payload planning process are:

a. MMF, to receive candidate requests transferred to the CSF via Decnet.

b. Operator, for manually requested candidates, for directives, for responses to error conditions, and to specify values for process option parameters.

c. Other processes in the FSS, as recipients of link requests and reports prepared by the payload planning process.

d. CSF data base, to store the file of candidate requests prepared by this process.

Interactions with the operator are shown in the following annotated dialog between the operator and the Payload Planning Process.

DIRECTIVE NAME: PAYLOADREQUEST

SHORT FORM: PLREQ

PURPOSE: To initiate payload request processing for loading planning, scheduling, or dynamic payload requests into the data base.

FORMAT: *PAYLOAD REQUEST*
<type_of_requests>,<sc_id>
<request_source>,[<display_options>],
[<report_options>].[<start_orbit>],
[<stop_orbit>]

where:

<type_of_requests> - [PLANNING,SCHEDULING]

<sc_id> = spacecraft id [LS4,LS5]

<request_source> = [<file_name>,MAN]
<file_name> = candidate requests are tranferred from MMF

MAN = candidate requests are manually entered

<display_options> = "[DETAIL,PARAMETER,INVALID,ERROR]"

<report_options> = "[DETAIL,PARAMETER,INVALID,ERROR]"

<start_orbit> = nnnnn orbit number of first candidate request

<stop_orbit> = nnnnn orbit number of last candidate request

<sc_id>, <start_orbit), and <stop_orbit> must be specified if <request_source> = MAN

Order of entering keywords for the display and report options is not important and the keywords can be abbreviated.

EXAMPLE:

```
PLREQ PLANNING,LS4,PC4000,"DET,ERROR"
PLREQ SCHED,LS4,SC400
PLREQ SCHED,LS4,MAN,0000100003
```

6.4.4.5.2 Mission Support Planning (CPD-1071)

TBS

6.4.4.5.3 Obtain Link Support Process (CSF-CPD-1072) - MRLNKSPT

The obtain link support (OLS) process is responsible for generating the link requests required to satisfy candidate requests and mission support requests. The OLS process is run weekly to identify link requirements in the advance scheduling process, and daily to identify additional support needed before preparing the next day's schedule. It performs the following tasks:

a. Selects best station to satisfy the request.

b. In case of overlap, selects station whose AOS most immediately precedes the center time of the request.

c. Builds resource IDs for the resources needed.

d. Updates the resources timeline with a code of "N" (needed) for the time the resource is needed.

e. Prints and displays a process summary report.

Interfaces for the OLS process are:

a. CSF operator, for process times and processing options.

b. CSF data base, to obtain requests, station resources, pass predictions, candidate request information and requirements, and to update the timelines in the station array.

Two key routines within the OLS process are the control routine, MRLNKSPT, and the routine, MRLNKREQ, that builds the resource ID and processes resource timelines to reflect the period for which the resource is needed.

An annotated OLS process dialog with the operator is shown below.

DIRECTIVE NAME:	OLS
PURPOSE:	OLS invokes the obtain link support process and consolidates the link requirement for NCC and NOCC.
FORMAT:	OLS <sc_id>,<start>,<stop>
where:	<sc_id> - spacecraft id [LS4,LS5]
	<start> - the beginning of the time interval for which requests are to be built as link support timelines (yy:ddd:hh:mm:ss)
	<stop> - the end of the time interval for which requests are to be built as link support timelines (yy:ddd:hh:mm:ss)
EXAMPLE:	OLS LS4,81:054:01:30:00,81:055:00:00:00

6.4.4.5.4 Screen Candidate Request Process (CSF-CPD-1073) - MRSCRNCR

The screen canddiate request (SCR) process sets a payload acquisition request to an unacceptable status when predicted cloud cover or minimum sun angle is outside customer specified tolerances. The SCR process is, normally, a part of the daily scheduling process that must wait for the cloud cover predictions before being run. It precedes the scheduling mission activities process.

The SCR process performs the following tasks:

a. For the time span specified by the operator, examines each candidate request for cloud cover and sun angle criteria.

b. For each scene, extracts from the scene record the sun angle and the coded cloud cover prediction.

c. Checks sun angle and predicted cloud cover against candidate request tolerances.

d. Stores an appropriate status code in the candidate request data record, depending on whether the request is within acceptable limits.

e. Prints a summary report and displays it on the operator console.

Interfaces for the SCR process are with the CSF data base and the operator. This process is intermediate between the payload planning process and the schedule mission activities process.

An annotated SCR dialog with the operator is shown below.

DIRECTIVE NAME:SCREEN

PURPOSE: SCREEN invokes the screen candidate request process and specifies process option parameters. This process checks payload requests (candidates) in order to determine whether or not the user's requirements for minimum sun elevation and maximum cloud cover have been satisfied. If not, the requests are flagged as deleted with the appropriate status code.

FORMAT: SCREEN <sc_id>,<start>,<stop>

where: <sc_id> - spacecraft id [LS4,LS5]

<start> - the beginning of the time interval for which requests are to be screened (yy:ddd:hh:mm:ss)

<stop> - the end of the time interval for which requests are to be screened (yy:ddd:hh:mm:ss)

EXAMPLE: SCREEN LS4,81:054:01:30:00,81:055:00:00:00

6.4.4.5.5 Schedule Mission Activities (CPD-1074)

TBS.

6.4.4.5.6 Generate Mission Activities (CSF-CPD-1075) - MRACTGEN

The generate mission activities (GMA) process is the last step in the daily scheduling process. It translates the schedule prepared by the schedule mission activities process into a time-ordered list of activities and transitions implicit in that schedule. It passes these lists to the FOS for further translation of the detailed activities into command sequences and, ultimately, for execution by the system. It also passes categorized lists of the scheduled FS activities to the acquisition analysis package for post-pass anlaysis of FS events.

The GMA process performs the following tasks:

a. Checks each of the resource timelines that have been prepared and stored by the schedule mission activities process for points of transition (e.g., from instrument off to on, or from link on to link off).

b. Matches the state transition to one defined in the translation area of the data base.

c. Adopts the acronym associated with the matching state transition found in the data base. This acronym defines, at a high level, what must be done to effect the transition from the old state to the new state.

d. Searches generic mission support records to find scheduled specific mission support requests. Uses the request descriptor as a key to the request requirements records in the translation area of the data base.

e. Searches the request requirements records to find the connected activity and its acronym.

f. Adjusts the request time length in accord with an indicator associated with the activity acronym.

g. The adjusted time, the activity acronym and any standard items associated with the acronym are inserted into the acronym buffer.

Interfaces for the GMA process are:

a. Resource timelines stored in the CSF data base by the schedule mission activities process.

b. Mission support request records stored in the data base.

c. Translation area of the data base that provides activity acronyms, time adjustments and other standard information to compile a time ordered sequence of activities for the FOS.

d. Schedule compiler of the command subsystem as recipient of the GMA output.

e. Acquisition analysis package of the FSS as recipient of the activities list for use in Flight Segment event analysis and acquisition accounting.

An annotated dialog between the GMA process and the operator is shown below.

DIRECTIVE NAME: GMA

PURPOSE: GMA invokes the generate mission activities process, which generates an activity list based on all scheduled requests, and specifies process option parameters.

FORMAT: GMA <sc_id>,<start>,<stop>,<filename>

where:

<sc_id> - spacecraft id (e.g., 4 designates LS4)

<start> - the beginning of the time interval for which mission activities are to be scheduled (:ddd:hh:mm:ss)

<stop> - the end of the time interval for whi;ch mission activities are to be scheduled (:ddd:hh:mm:ss)

<filename> - the file specification of the generated activity list
[[directory]:]c(1)...c(9)[.ACT]
where:
    directory - the directory, and if any, the subdirectory names
*The default directory and extension names are generated by GMA
*The default directory is FSS$DATA.
The default extension is .ACT.
    c(n) - file name consisting of any character string of length 0-9 as defined in the RMS manual.

EXAMPLE:

GMA 4 :054:01:30:00 :055:00:00:00 (FSS6]GENACT.ACT
GMA 4 :347:12:00:30 :340:11:30:45 [FSS6]GENER

6.4.4.6 Acquisition Analysis Package (CSF-PKG-1012)

6.4.4.6.1 Ancillary Data Processing (CPD-1077)

TBS

6.4.4.6.2 Flight Segment Events Analysis (CSF-CPD-1076) - MQEVENTS

The FS events analysis process matches scheduled activities against the actual on-pass events (as translated from selected indicators in FS telemetry), and flags the success or failure of the activity accordingly. The functions performed by this process include:

a. Get process options and time span from the operator.

b. Read events file to create events array.

c. Read schedule activity file to get events acronym and scheduled time.

d. Get delta time limit for matching events to scheduled activities.

e. Search events array to match event to scheduled activity within delta time tolerance.

f. Flag event status.

g. Generate reports for each category of scheduled activities; i.e.,

   1. Payload activities

   2. Mission support activities

   3. Network activities

   4. Standard tape recorder activities.

h. Generate payload activity profile with updated status for later use in the payload acquisition accounting process.

Interfaces for the FS events analysis process are:

a. Activities list is created by the GMA.

b. CSF data base supplies the association between the activity acronym and the event category.

c. CSF telemetry subsystem supplies the spacecraft event messages.

d. NCC subsystem supplies network event messages.

e. Mission support analysis report is prepared for mission management.

f. Link analysis report is output to the NCC subsystem for relay to the NCC and to mission management.

g. Standard tape recorder analysis report is supplied to mission management and the performance evaluation subsystem.

h. Payload events profile becomes a data entry to the payload acquisition accounting process.

The dialog between the operator and the events analysis process is as follows.

DIRECTIVE NAME: EVENT

SHORT FORM: EV

PURPOSE: This directive initiates events analysis process and displays menu.

After invoking the process the operator is asked to enter one of the following commands:

$COMMAND?

RUN - execute events analysis process

MOD,parameter,desired_value

Modify the parameter to desired value.

<CNTL P> - snap shot screen display on Versatec printer

<CNTL E> - Terminate process

PARAMETER RANGES:

SPACECRAFT ID: 4 OR 5 (DEFAULT 4)

START/STOP TIME: 1981:001:00:00.00. TO 1999:365:00:00:00.

6.4.4.6.3 Payload Acquisition Accounting Process (CSF-CPD-1078) - MQACCNTG

The payload acquisition accounting process determines and reports the final status of each scheduled payload activity. The functions performed by this process include:

a. Get process options and time span from operator.

b. Compare payload events against scheduled payload requests.

c. Compare contents of the ancillary data file directories with the corresponding payload events profiles.

d. Determines the final status of all scheduled payload activities; i.e., whether the events profile indicates that sensor data was taken and transmitted, and whether the data directories indicate that MSS or TM correction data exists to cover the candidate request period.

e. Update the status of payload requests and produce the payload events status file for the MMF.

f. Produce the payload acquisition accounting report.

Interfaces for the payload acquisition accounting process are:

a. Operator, for options, for the processing time span, and for reactions to error reports.

b. CSF data base, for the scheduled payload requests.

c. MSS or PCD data packet directories, for information about the existence of ancillary data.

d. MMF, as recipient of payload events status file.

The payload acquisition accounting process interacts with the operator as follows:

DIRECTIVE NAME: ACCOUNTING

SHORT FORM: None

PURPOSE: This directive and associated data entry are used in invoking the payload acquisition accounting process

FORMAT: ACCOUNTING, lsd,st_time,sp_time

where: lsd - spacecraft ID

st_time - start time (yy:ddd:hh:mm:ss.cc)

sp_time - stop time (yy:ddd:hh:mm:ss.cc)

After invoking the process, the operator is asked to enter one of the following commands:

VARIABLE?

GO - Execute process using the current input/output parameters

If any of parameters is desired to be changed, enter name of parameter, then it will prompt:

NEW ´VARIABLE´? - Enter value to be updated

<CNTL E> - Terminate process

<CNTL P> - Snap shot screen display on Versatec printer

PARAMETER RANGES:

SPACECRAFT ID : LSD4 OR LSD5 (DEFAULT LSD4)

START/STOP TIME: 1981:001:00:00:00.0 TO 1999:365:00:00:00.0

ERROR MESSAGES:

When an error is detected during the process, one of the following messages will be displayed on the screen:

.Can't interpret event - MDPLPRFL record #

.Bad data record - MDMSSDIR #

.Bad data record - MDPCDDIR #

.Can't get candidate information

.Cant get any more requests

.Bad start time

.Bad end time

.End time before start time

.Bad spacecraft ID

.Can't read directive

6.4.4.7 Network Control Center Subsystem - Link Schedule Handler - NNLNKSCH

The link schedule handler subsystem is a key element of the network control center subsystem (NCCS). It is responsible for transmitting and receiving all link schedule related information to and from the network's operations centers; i.e., the NOCC and the NCC. The process described here details the functions involved in obtaining the required GSTDN link support from the NOCC. These functions include:

a. From the CSF data base it retrieves link support required for a specified interval by examining the resource timelines.

b. Smooths the link requirements timelines and generates link support requests on a station/pass basis.

c. Accepts operator entry of:

   1. Weekly advance schedules transmitted from NOCC

   2. Updates to the schedule by NOCC in the form of later schedules or impact messages.

d. Logs all input schedules and changes to the CSF data base and updates the resource timeline records.

e. Notifies the operator of scheduled support that may be released.

f. Generates pass briefing messages for transmission to the ground stations.

g. Displays the current schedule and related information at the operator's request.

h. Generates requests for additonal link support needed for NOCC.

Interfaces for the link schedule handler are:

a. Operator for entry of NOCC information and entry of processing time spans.

b. FSS via the CSF data base, for link support requirement timelines and link support release information.

The logic of the main routine, NNLNKSCH, is as follows:

```
PROC
    RECEIVE SATELLITE ID, NETWORK AGENCY, PROCESSING SPAN AND FUNCTION
        FROM OPERATOR
    IF FUNCTION = ADVANCE SCHEDULE LOGGING
    THEN
        INITIALIZE NETWORK SUPPORT REQUEST AREA FROM INFORMATION IN
            LINK SUPPORT REQUIREMENT TIMELINES
        CREATE SUPPORT REQUEST SPAN AND SUPPORT REQUEST MESSAGE RECORDS
    ELSEIF FUNCTION = MODIFICATIONS TO EXISTING SCHEDULE
    THEN
        COPY SCHEDULE INTO A TEMPORARY FILE
    ELSEIF FUNCTION = SCHEDULE LOG OR MODIFICATION
    THEN
        MERGE ALL OPERATOR INPUT INTO THE TEMPORARY FILE
        UPDATE DATA BASE WITH INFORMATION IN THE TEMPORARY FILE
        MARK STATUS OF EACH SUPPORT REQUEST SPAN RECORD AS GRANTED/
            DENIED/MODIFIED/
        PROCESS DISCREPANCY REPORTS
        UPDATE RESOURCE TIMELINES
    ELSEIF FUNCTION=DISPLAY SCHEDULE
    THEN
        DISPLAY CURRENT SCHEDULE TO OPERATOR
    ELSEIF FUNCTION = RELEASE UNNEEDED SUPPORT
    THEN
        CHECK STATUS OF SUPPORT REQUEST SPAN RECORDS
        DISPLAY THE SUPPORT RECORDS NOT NEEDED
    ELSEIF FUNCTION = GENERATE ADDITIONAL SUPPORT
    THEN
        CHECK LINK RESOURCE TIMELINES
        FIND ADDITIONAL SUPPORT REQUIRED
        UPDATE NETWORK SUPPORT REQUEST AREA
        INFORM OPERATOR OF ADDITIONAL SUPPORT
    ELSEIF FUNCTION = GENERATE PASS BRIEFING MESSAGE
    THEN
```

```
        ANALYZE GROUND TAPE RECORDER SCHEDULE
        INCORPORATE INTO PASS BRIEFING MESSAGE
        GENERATE REPORT TO THE OPERATOR
    END IF
    UPDATE INVENTORY RECORD
END PROC
```


C-3

SECTION 7

PAYLOAD CORRECTION PROCESSING

7.1 ENVIRONMENT/RESOURCES

Payload correction processing (PCP) is performed in the MMF-M DEC-2050. The only activity involving any other computer is the retrieval of files via Decnet from the CSF VAX 11/780 (raw telemetry data and directories) and the DRRTS PDP 11/34 (HDT-RM directory, HDT quality file, image quality file). The software required for PCP consists of several FMS (Flight Segment Management subsystem) routines, all PCS (payload correction subsystem) routines, and several utilities. The parts of the MMF-M data base used by PCP are: ephemeris/telemetry area, production area, WRS parameter area, product assessment area, and archive product area.

Except for initiating transactions, PCP is normally an all automatic function. Operator involvement is required only to react to the system console messages, examine processing summary reports, examine line test results, and notify Quality Assurance that reports are available for them.

Since PCP is normally all automatic, the normal mode requires no procedures. However, the file handling can and will generate many messages indicating that something was not absolutely correct. There are many such error conditions, and procedures for handling the most common of these must be written. Usually this will require running the PCP routines in manual mode; therefore SOPs for these manual modes must also be written.

TM PCD processing for the Interim Thematic Mapper Data System is TBD.

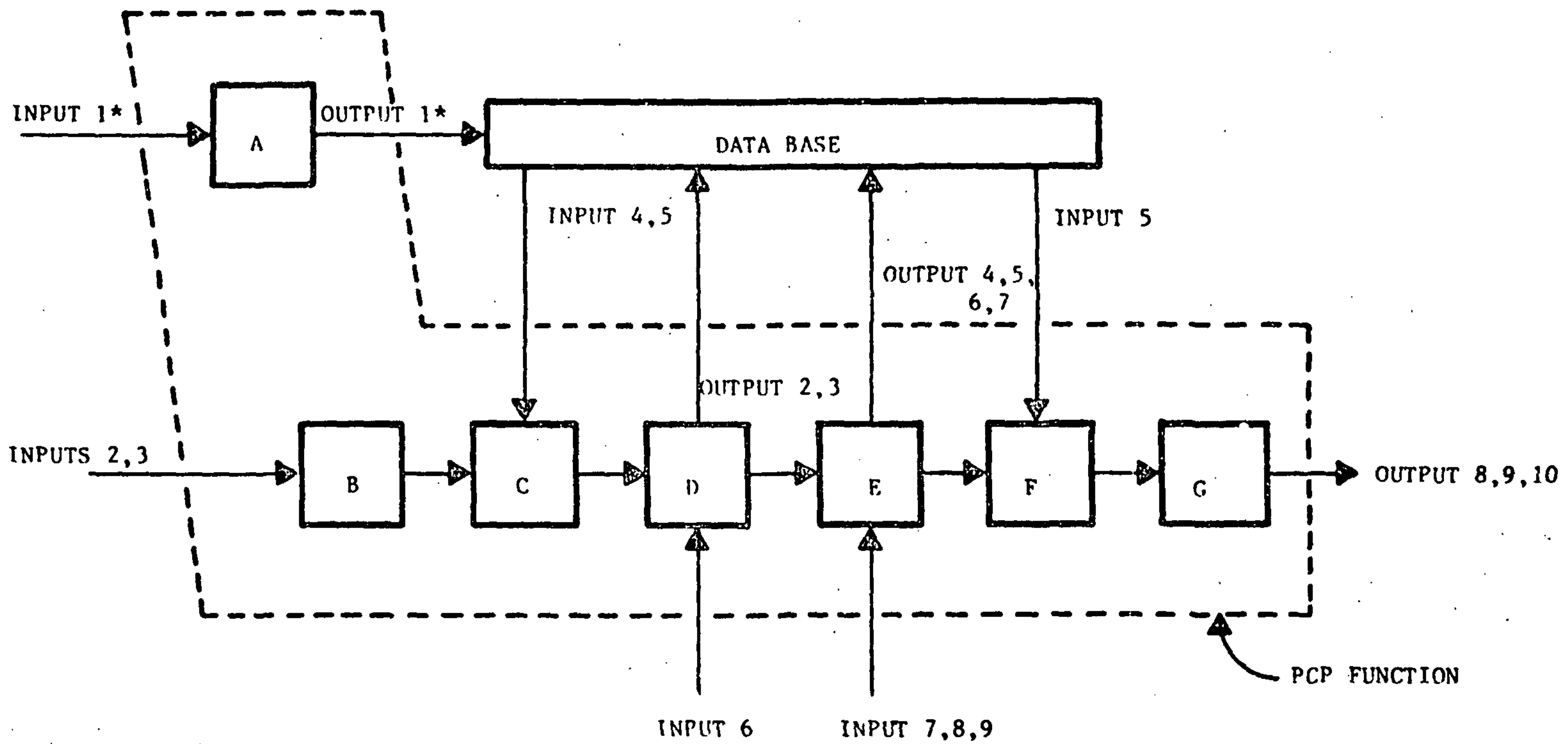
7.2 OVERVIEW/BACKGROUND

The basic purpose of payload correction processing is to convert raw telemetry information into a form easily used for geometric correction computations in archive generation. The PCP function consists of these mathematical steps and their control, plus the processing of some of the required input information, specifically the pole wander coordinates and the HDT-RM directories.

The PCP function can be decomposed into seven steps, as shown in Figure 7-1. In actual practice one or more of these steps may be performed in sequence by a single transaction. Tables 7-1 and 7-2 give the inputs and outputs to the PCP function. Although the various steps can (and will) be performed asynchronously, they can be discussed conceptually as a single flow without simplifying the control or flow.

7.3 FUNCTION DESCRIPTION

There are two functions which precede PCP; inputs for Phase 1 processing come from spacecraft scheduling, while inputs for Phase 2 processing come from image acquisition. Since these two functions receive data via different links from the spacecraft, the arrival of their outputs to PCP cannot be known in advance. This is one of the reasons that PCP is broken into two phases, which permits initial processing of the telemetry (Phase 1) as soon as practical, with the final processing taking place as soon as Phase 1 has been completed and the inputs from image acquisition have been received. The function which follows PCP is archive scheduling.



A: POLE WANDER HANDLER
B: PCP PHASE 1 SCHEDULING
C: PCP PHASE 1
D: PCP PHASE 1 COMPLETION

E: PCP PHASE 2 SCHEDULING
F: PCP PHASE 2
G: PCP PHASE 2 COMPLETION

*SEE TABLE 7-1 AND TABLE 7-2 FOR DETAILS

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Figure 7-1. Individual PCP Steps, Showing External Interfaces

Table 7-1. PCP Inputs

ITEM	CONTENTS	SOURCE	COMMENTS
1. Pole Wander Data	Pole Wander Values	Project Office (Naval Obs)	Manual entry New data every 14 days
2. Raw Telemetry Data	Attitude, Ephemeris, S/C Mode	Spacecraft Scheduling	30 day retention
3. Telemetry Data Directory	Telemetry Start/Stop Times	Spacecraft Scheduling	
4. Short Term Parameters	Pole Wander Values	Data Base	Phase 1 only
5. Long Term Parameters	WRS Data, Nominal Values, etc.	Data Base	Phase 1 and 2
6. Desired Scenes List	Scheduled Scenes for which CSF believes data was acquired	Spacecraft Scheduling	
7. HDT-RM Directory	Video Start/Stop Times	Image Data Acquisition	On Interval Basis
8. HDT Quality Data	ECC Information	Image Data Acquisition	
9. Image Quality Data	Syne Loss Information	Image Data Acquisition	

Table 7-2. PCP Outputs

ITEM	CONTENTS	DESTINATION	COMMENTS
1. Pole Wander Data	Pole Wander Values	Data Base	In Short Term Params
2. Telemetry Directory	Telemetry Start/Stop Times	Data Base	30 day retention
3. Status of Desired Scenes	Updated Status Information	Data Base	
4. HDT-RM Directory	Video Start/Stop Times	Data Base	TBD day retention
5. HDT-Quality Data	ECC Information	Data Base	On Scene Basis
6. Image Quality Data	Sync Loss Information	Data Base	
7. Status of Desired Scenes	Updated Status Information	Data Base	
8. Processed Telemetry Data	Processed Attitude, Ephemeris	Archive Scheduling	4 day retention On Interval Basis
9. Correction Data	Geometric Correction Information	Archive Scheduling	4 day retention On Interval Basis
10. Scene List	Scenes for which all required inputs are available	Archive Scheduling	
11. QA Reports/Comments		Archive Generation, QA Data Base	
12. Processing Summary Info			

Figure 7-2 shows all the individual software units used in PCP and groups them into the seven steps shown in Figure 7-1. These seven steps can be run separately or the three Phase 1 steps and the three Phase 2 steps can be combined into two large transactions, as shown in Figure 7-2, which is the normal processing mode. These two transactions are invoked by selecting the appropriate entries from the MMF processing menu. The pole wander handler is usually run separately.

Except for operator entries in the manual operational mode and the pole wander data, all external inputs are data files. Table 7-1 lists the inputs and their source and gives a brief description of their contents. The raw telemetry data is a subset of all received telemetry and has been compressed in CSF in two ways: 1) the time intervals have been shortened, if necessary, to include only desired scenes, with sufficient excess preserved to guarantee coverage; and 2) some data in the telemetry stream not needed in PCP has been removed. This raw telemetry data and associated directories are retrieved from CSF over Decnet using the standard protocols. These files are unsolicited; normally all available files are picked up and processed by PCP.

The HDT-RM directory, HDT quality data, and image quality data files are retrieved from DRRTS over Decnet using the standard protocols. These files are unsolicited; normally all available files are picked up and processed by PCP. The contents of the HDT quality data file and the image quality data file are

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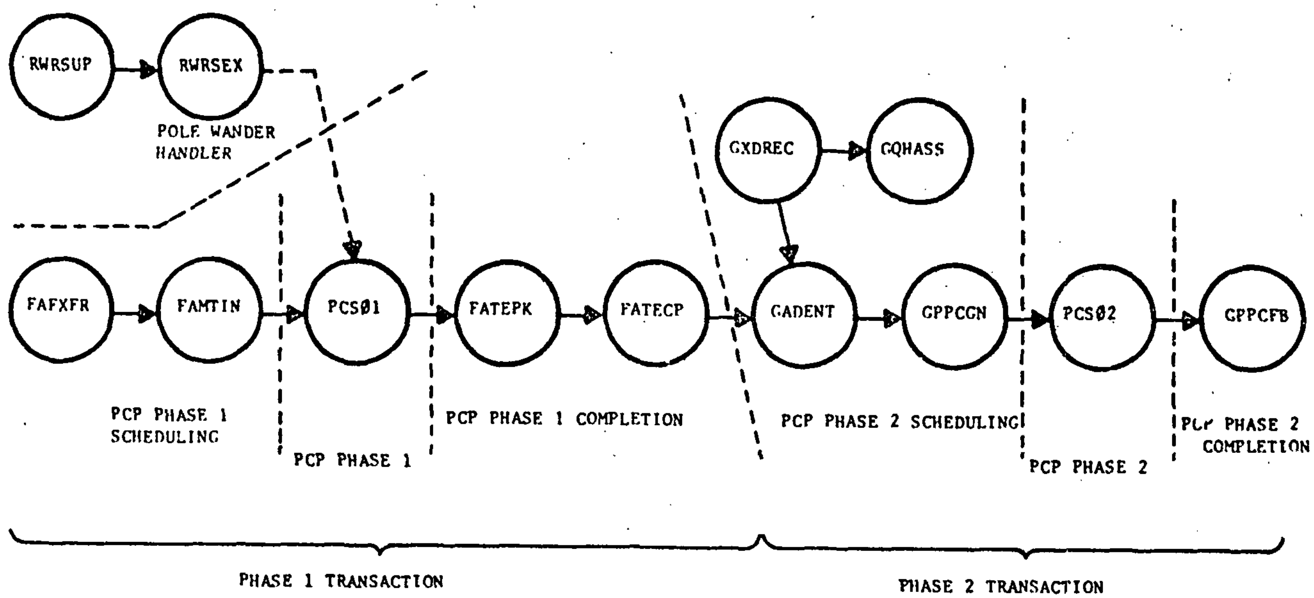

Figure 7-2. Software Structure of Payload Correction Processing

not used in the main line PCP function; they are merely reformatted and put into the data base for later use in evaluating tape drives and for generating tape quality statistics.

The desired/acquired scene list is created at the beginning of the spacecraft scheduling function and is updated every time a significant event occurs for any scene on the list. When first accessed by PCP the list contains those scenes for which acquisition was scheduled and for which the scheduling function, based on housekeeping data in the telemetry, believed data should have been acquired. At three places in PCP the status of scenes in this list is changed: first, when telemetry for the scenes has been successfully processed by PCP Phase 1; next, when the HDT-RM directory processing indicates that acceptable video was acquired for the scene; and finally when the outputs from PCP Phase 2 are available for the scene. The final updated list is an output of PCP, to be used in the archive generation scheduling function. Whenever one of these stages is completed for a scene the status is changed. Thus, if the HDT-RM directory is processed first, indicating that the video is available, this status would precede the status indicating that the processed telemetry was available. A management report exists that gives the status of each scene in this list upon request.

The two types of outputs from PCP are data files and reports. Table 7-2 lists the outputs and their destination and gives a brief description of their contents. The reports consist of a processing summary report for each computer program, a QA report from PCS Phase 1 and PCS Phase 2, and error reports for

each program (only generated when errors are detected). The primary outputs for use in later image processing are the processed telemetry data, which is put on the HDT-AM product, and the correction data, which is essential in the archive generation function for computing the geometric correction information that is put on the HDT-AM product. These two PCP outputs are sent unchanged to MIPS by the archive generation scheduling function as part of the archive generation process request package.

7.4 PROCESS OPERATIONS

In this section some general comments about payload correction processing are given. The PCP function does not require any dedicated personnel. The MMF-M computer operator will examine the hardcopy reports for error messages and unusual results and will immediately bring these to the attention of the operations supervisor. QA will be notified when reports are available. Either a QA technician or an image analyst will evaluate the reports and take the QA reports to the QA area. The processing summary and error reports will remain in the MMF-M area and will be bound and retained for later reference.

Because of the automatic nature of the PCP function, the only operational prerequisite is the daily line test. There are separate tests for PCP Phase 1 and Phase 2. Normally, they will both be run at the start of the first production shift of the day. The standard reports are generated from the line test and, in addition, the number of differences from the baseline results are reported (see Figures 7-3 and 7-4). Any differences other than those expected (as noted in the examples shown in the two figures) will mean failure of the

```
PCS1LT                              PCS PHASE ONE LINE TEST REPORT                                                  PAGE 1
DATE: 16-OCT-81                                                                                                     NNF-N
TIME: 10:34:10                       PROCESS REQUEST ID: BATCH                               PCS BASELINE: 18-AUG-81
SEQ. NO.: 928                       LT PARM FILE: PL4928.CTB                            ST PARM FILE: PS4928.CTB

                              DESCRIPTION OF DIFFERENCES
REC TYPE   REC NR    BYTE FIELD              EXPECTED                                ACTUAL
--------   ------    ----------    ----------------------                 -------------------------
STDHDR        1        17- 28      81289100000                            81289102919                -- This difference will
             TOTAL DIFFERENCES:     1                                                                   always occur
```

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Figure 7-3. PCS Ø1 Line Test Report

```
PCS2LT                                PCS PHASE TWO LINE TEST REPORT                                       PAGE 1
DATE:  6-OCT-81                                                                                            MRF-A
TIME: 15:11:33                        PROCESS REQUEST ID: SPR001.CTB                           PCS BASELINE: 20AUG81
SEQ. NO.: 928                         LT PARM FILE: PL4928.CTB                              HOT TAPE ID: LAMHH130012

                              DESCRIPTION OF DIFFERENCES
REC TYPE   REC NR   BYTE FIELD             EXPECTED                       ACTUAL
--------   ------   ----------   ----------------------         ----------------------
STD HDR       1        9- 12     PCS                            YEE
STD HDR       1       17- 28     81234123456                    81234123999             -- This difference will
                                                                                           always occur

CURINX.CTB -- REACHED EOF BEFORE COMPLETION

STD HDR       1        1-  8     STD HDR                        PC602
FLNM          2        5- 10     SFC001                         SF.999
FLNM          3        1-  4     FLNM                           FLNE
FLNM          3        5- 10     SCD812                         ABC812

CURINX.CRC -- REACHED EOF BEFORE COMPLETION

STD HDR       1       13- 16     GMS                            YEE

DELINX.CRC -- REACHED EOF BEFORE COMPLETION

STD HDR       1        1-  8     STD HDR                        ROSE 03
STD HDR       1       17- 28     81279151114                    81278132426
FBHD          2        1-  4     FBHD                           ROSE
FBHD          2       18- 28     81279151114                    81278132426
FBHD          2       29- 39     81279151133                    81278132556
FBHD          2       46- 51     PCS000                         PCS999
FBIN          3       13- 18     SCD001                         YEE812
FBSC          4       15- 20     PCS000                         PCS111
STD HDR       1        9- 12     PCS                            YEE
STD HDR       1       17- 28     81279151114                    81279150154
STD HDR       1       45- 60     20AUG81                        06OCT81
SCHD          2        1-  4     SCHD                           DATA
SCSE         12        1-  4     SCSE                           ROSE
SCSE         12       33- 46      0.2326141E+01                  0.2326141E+99
SCSE         13       19- 32     -0.5865673E+02                 -0.5865673E+88
SCSA         23        1-  4     SCSA
SCSA         23        5- 18      0.2753956E-04                  0.9999999E-04
SCSA         34       19- 32     -0.1058251E-04                 -0.9999999E-04
           TOTAL DIFFERENCES:   25
```

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Figure 7-4. PCS Ø2 Line Test Report

line test and no processing will be initiated. The operator will bring any unexpected differences to the attention of the operations supervisor and QA personnel immediately.

The normal operation of the PCP function is broken into two transactions, as shown in Figure 7-2. In order to ensure that the archive scheduling function is kept loaded, the second transaction, called Phase 2, will be run as soon as the line test is completed successfully. The first transaction, called Phase 1, will be run about every 90 minutes to pick up any available new telemetry from recent data acquisitions (which occur at approximately 90 minute intervals). The Phase 2 transaction will be run twice per shift as data becomes available from DRRTS. The operator will check the Decnet file index in the middle and toward the end of the shift and initiate the transaction if new directories are available. Another case when this transaction will be initiated is if significant telemetry was processed by the Phase 1 transaction, for which matching HDT-RM directories have already been received from DRRTS.

Estimated run time for the Phase 1 transaction is 15-20 minutes for a whole day's processing load. Estimated run time for the Phase 2 transaction is 20-30 minutes.

7.4.1 POLE WANDER HANDLER

One of the key sets of input parameters to the PCP Phase 1 process is the pole wander coordinates. The U.S. Naval Observatory computes values which must be entered into the PCP short-term parameter file, and this is the function of the

pole wander handler process. The pole wander information is received weekly and contains predicted values for each day in a 40-day interval. The information is received in printed form and must be manually keyed into MMF-M using an interactive terminal (VT78 or VT100). Figure 7-5 shows an example of the input data sheets. These are received from the project office and given to a data processing planner, who makes a duplicate which is given to a data technician for entry into MMF-M. The original is given to a flight operations planner for use in CSF.

Figure 7-6 shows the basic flow for the pole wander handler. The display presented to the data technician on the interactive terminal is shown in Figure 7-7. The pole wander values for each date are entered separately. Normally, 10 days are entered at one session, starting with values for the next calendar day. (The overlap between the 10-day entry period and the weekly receipt is handled by the system. The most recent data is always used for processing.) An example of the summary report is shown in Figure 7-8. The data technician will verify that the summary report agrees with the input data sheet. Threshold checks are made on all entered values; those which fail the check will be rejected and the operator will be prompted for the correct value.

The CPDSs that give more detail about the software units in this process and which list the possible error messages and recommended actons are: RWRSUP - LSD-MMF-CPD-2121 and RWRSEX - LSD-MMF-CPD-2122.

U. S. NAVAL OBSERVATORY
WASHINGTON, D.C. 20390

21 MAY 1981
NO. 699

PRELIMINARY TIMES AND COORDINATES OF THE POLE, SERIES 7

I. GENERAL INFORMATION

A. ABBREVIATIONS:

BIH:	BUREAU INTERNATIONAL DE L'HEURE, PARIS, FRANCE
CIO:	CONVENTIONAL INTERNATIONAL ORIGIN
DPMS:	DOPPLER POLAR MONITORING SERVICE, DEFENSE MAPPING AGENCY (DMATC)
TAI:	INTERNATIONAL ATOMIC TIME
ILS:	INTERNATIONAL LATITUDE SERVICE, MIZUSAWA-SHI, JAPAN
IPMS:	INTERNATIONAL POLAR MOTION SERVICE, MIZUSAWA-SHI, JAPAN
NBS:	NATIONAL BUREAU OF STANDARDS, BOULDER, COLORADO
NOTSS:	U.S. NAVAL OBSERVATORY TIME SERVICE SUBSTATION, RICHMOND, FLORIDA
USNO:	U.S. NAVAL OBSERVATORY TIME SERVICE, WASHINGTON, D.C.

B. CONSTANTS

BEGINNING 1 JANUARY 1980 - 30 JUNE 1981

JD = MJD + 2 400 000.5
TAI - UTC(BIH) = 19.00000S

ET = TAI + 32.184S
A.1(USNO, MEAN) - UTC(USNO, MEAN) = 19.0343817S

A.1(USNO, MEAN) = TA(USNO)
A.1(USNO) - UTC(USNO) = 19.0343817S

II. TIME SCALES

A. TO COORDINATE UTC(USNO) AS CLOSELY AS POSSIBLE WITH TAI AND UTC(BIH), A SMALL INTENTIONAL FREQUENCY OFFSET EXISTS BETWEEN UTC(USNO) AND THE INDEPENDENT LOCAL TIME UTC(USNO,MEAN). THE OFFSET IS APPROXIMATELY

DELTA F/F = -4.63×10^{-13} SINCE 1 JAN. 1977, WHERE
UTC(USNO) = UTC(USNO, MEAN) + DELTA F/F.

SIMILARLY, UTC(NBS) IS OFFSET COMPARED TO THE LOCAL TIME SCALE TA(NBS). THE FOLLOWING EQUATION IS APPROXIMATELY VALID AS OF 1 JUL. 1980 (FOR DETAILS, SEE NBS TIME AND FREQUENCY SERVICES BULLETIN NO. 272):

DELTA F/F = $+0.88 \times 10^{-13}$.

Figure 7-5. Input Data Sheet

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PRELIMINARY TIMES AND COORDINATES OF THE POLE, SERIES 7 NO. 699 (CONTINUED)

ESTIMATED ACCURACIES ARE: PREDICTIONS	10 DAY	20 DAY	30 DAY	40 DAY
POLAR COORDINATES	0.017	0.021	0.026	0.031
UT1-UTC	0.0030	0.0044	0.0060	0.0076

DATE 1981	MJD	X	Y	UT1-UTC	DATE 1981	MJD	X	Y	UT1-UTC
MAY 18	44742	0.073	0.256	-0.5412	JUN 7	44762	0.058	0.249	-0.5864
19	44743	0.073	0.255	-0.5436	8	44763	0.057	0.249	-0.5885
20	44744	0.072	0.255	-0.5460	9	44764	0.057	0.249	-0.5906
21	44745	0.071	0.254	-0.5484	10	44765	0.056	0.248	-0.5926
22	44746	0.070	0.254	-0.5508	11	44766	0.055	0.248	-0.5947
MAY 23	44747	0.070	0.253	-0.5531	JUN 12	44767	0.054	0.248	-0.5967
24	44748	0.069	0.253	-0.5554	13	44768	0.053	0.248	-0.5987
25	44749	0.068	0.253	-0.5578	14	44769	0.053	0.248	-0.6007
26	44750	0.067	0.252	-0.5601	15	44770	0.052	0.248	-0.6026
27	44751	0.067	0.252	-0.5623	16	44771	0.051	0.248	-0.6046
MAY 28	44752	0.066	0.252	-0.5646	JUN 17	44772	0.050	0.248	-0.6065
29	44753	0.065	0.251	-0.5669	18	44773	0.049	0.248	-0.6085
30	44754	0.064	0.251	-0.5691	19	44774	0.049	0.248	-0.6104
31	44755	0.064	0.251	-0.5713	20	44775	0.048	0.247	-0.6123
JUN 1	44756	0.063	0.250	-0.5735	21	44776	0.047	0.247	-0.6141
JUN 2	44757	0.062	0.250	-0.5757	JUN 22	44777	0.046	0.247	-0.6160
3	44758	0.061	0.250	-0.5779	23	44778	0.045	0.247	-0.6178
4	44759	0.061	0.250	-0.5800	24	44779	0.045	0.248	-0.6197
5	44760	0.060	0.249	-0.5822	25	44780	0.044	0.248	-0.6215
6	44761	0.059	0.249	-0.5843	26	44781	0.043	0.248	-0.6233

Figure 7-5. (Continued)

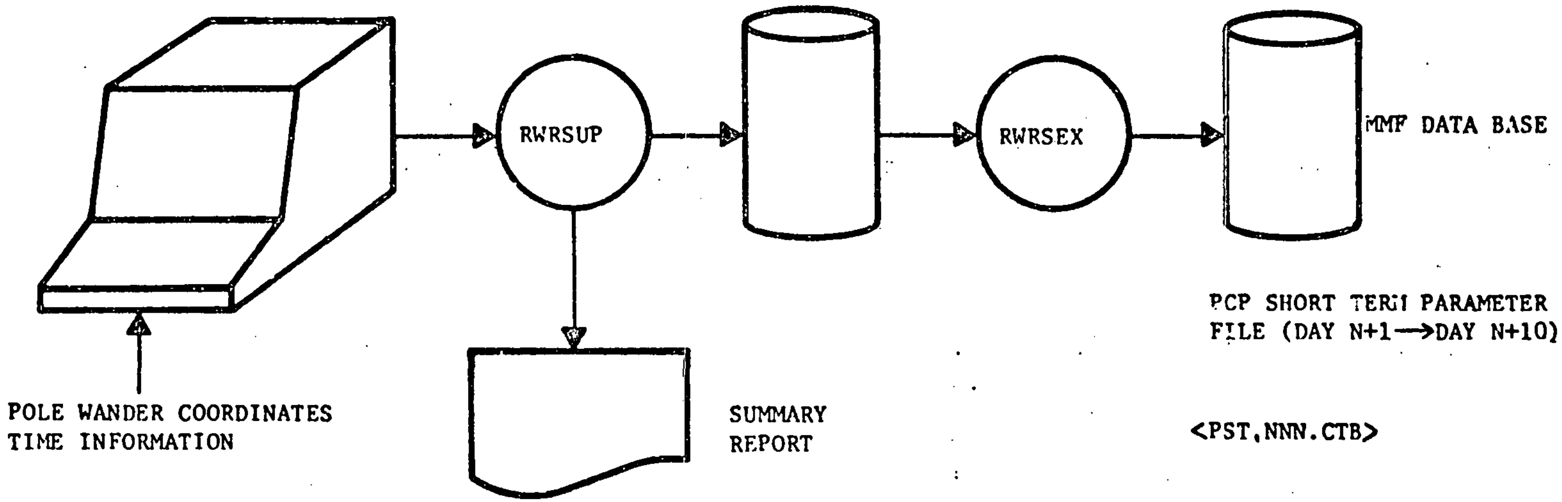

Figure 7-6. Pole Wander Handler Process

```
RWRSUP ---------WRS-PARAMETER AREA UPDATE (RECORD/FIELD SCREEN) --------- RWRSUP

RECORD: WPR-WRS-PARAMETER              CALC KEY: POLE5037 FUNCTION: FIND

--------- FIELD NAME ---------    ----- FIELD TYPE -----      ----- FIELD VALUE -----
WPR-POLE-REC-TYPE                 REQUIRED                    ----
WPR-POLE-DATE-APPLICABLE          JULIAN DATE YYDDD           -----
WPR-POLE-X-COORDINATE             (+/-)0.9(7)E(+/-)9(2)       -------.----.--
WPR-POLE-Y-COORDINATE                                         -------.----.--
WPR-POLE-UT1-UTC                  (+/-)0.9(7)E(+/-)9(2)       -------.----.--
WPR-POLE-DATE-LAST-UPD                                        -----
WPR-POLE-FILLER                                               -------.----.--
```

Figure 7-7. Pole Wander Handler CRT Display

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```
LISTING   : NP1770               NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                          PAGE :        1
SUBSYSTEM :    MSS                        GODDARD SPACE FLIGHT CENTER                                    DATE : 25-FEB-82
                                  LANDSAT MISSION MANAGEMENT FACILITY - MSS                              TIME :     14:14

                               WRS-PARAMETER AREA UPDATE PROCESSING SUMMARY (RWRSUP)

INFORMATION: WPR-WRS-PARAMETER RECORD WAS RETRIEVED AND DISPLAYED ON THE SCREEN

INFORMATION: WPR-WRS-PARAMETER RECORD WAS RETRIEVED AND DISPLAYED ON THE SCREEN

INFORMATION: WPR-WRS-PARAMETER RECORD WAS RETRIEVED AND DISPLAYED ON THE SCREEN

         PROCESSING TOTALS:
            TOTAL NUMBER OF RECORDS RETRIEVED/DISPLAYED.....   3
            TOTAL NUMBER OF RECORDS ADDED TO DATA BASE......   0
            TOTAL NUMBER OF RECORDS MODIFIED................   0

RWRSUP-END OF PROCESSING
```

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Figure 7-8. Pole Wander Handler Summary Report

7.4.2 PCP PHASE 1 SCHEDULER

PCP Phase 1 scheduler sets up the PCP Phase 1 process by retrieving raw telemetry data files and their directories from CSF, identifying available files and directories previously transferred by the spacecraft planning/scheduling function, verifying the format of the files, and entering the names of these raw telemetry files and directives into an index file. This index file (called the "To be processed" index file, with file name CURINX.CTB) drives PCP Phase 1.

Figure 7-9 shows the basic flow for the PCP Phase 1 scheduler. It should be noted that FAFXFR is also a part of the spacecraft planning/scheduling function and whenever it is activated it transfers all files of all types in CSF awaiting Decnet transfer.

FAMTIN will use, as input, raw telemetry and directories transferred by any previous activation of FAFXFR. Examples of the reports produced by FAMTIN are shown in Figures 7-10a through 7-10d.

The PCP Phase 1 scheduler uses the telemetry file directory to determine what raw telemetry should be scheduled for PCP Phase 1. If a raw telemetry file exists but the directory is invalid or non-existent, then that raw telemetry will not be validated and entered in the index file. If a useable directory does not become available after four days, the raw telemetry is put into a hold state.

The CPDSs which give more detail about the two software units in this process and which list the possible error messages and recommended actions are: FAFXFR - LSD-MMF-CPD-2004, and FAMTIN - LSD-MMF-CPD-2098.

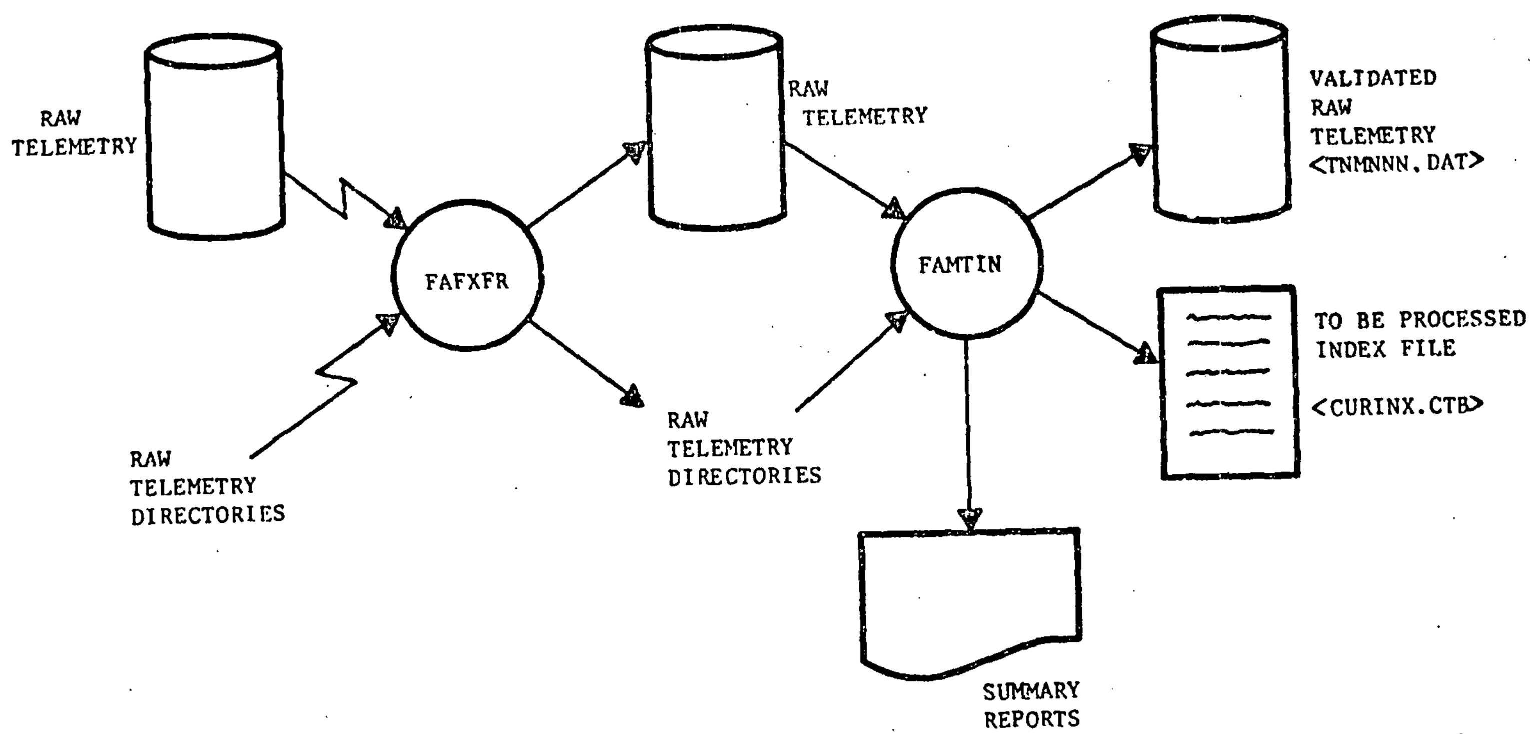

Figure 7-9. PCP Phase 1 Scheduling Process

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```
LISTING   : FA1210            NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                PAGE :         1
SUBSYSTEM :    FPS                     GODDARD SPACE FLIGHT CENTER                         DATE : 17-SEP-81
                                    LANDSAT MISSION MANAGEMENT FACILITY                    TIME :     09:35

                              ** MSS TELEMETRY INGEST (FAMTIN) PROCESSING SUMMARY

FILE PROCESSING SUMMARY
DIRECTORY = TOMO01JRC          FILE = T44001
INTERVAL START = 81264120101144  INTERVAL-STOP = 81264120204555
NUMBER OF DECOFT HEADER ERRORS. = 00005
NUMBER OF FILE HEADER ERRORS... = 00006
NUMBER OF DATA RECORD ERRORS... = 00019
NUMBER OF DATA RECORDS......... = 00018

FILE PROCESSING SUMMARY
DIRECTORY = TOMO01JRC          FILE = T44002
INTERVAL START = 81264120101444  INTERVAL-STOP = 81264120306555
NUMBER OF DECOFT HEADER ERRORS. = 00000
NUMBER OF FILE HEADER ERRORS... = 00000
NUMBER OF DATA RECORD ERRORS... = 00000
NUMBER OF DATA RECORDS......... = 00008

FILE PROCESSING SUMMARY
DIRECTORY = TOMO01JRC          FILE = T44003
INTERVAL START = 81264040000444  INTERVAL-STOP = 81264040104555
NUMBER OF DECOFT HEADER ERRORS. = 00000
NUMBER OF FILE HEADER ERRORS... = 00000
NUMBER OF DATA RECORD ERRORS... = 00000
NUMBER OF DATA RECORDS......... = 00008

FILE PROCESSING SUMMARY
DIRECTORY = TOMO01JRC          FILE = T44004
INTERVAL START = 81266040003444  INTERVAL-STOP = 81266040204555
NUMBER OF DECOFT HEADER ERRORS. = 00000
NUMBER OF FILE HEADER ERRORS... = 00003
NUMBER OF DATA RECORD ERRORS... = 00000
NUMBER OF DATA RECORDS......... = 00008

DIRECTORY PROCESSING SUMMARY
DIRECTORY = TOM001
NUMBER OF FILES.............. =  00004
NUMBER OF RESTATUSED FILES.. =  00002
NUMBER OF FILES FAILING EDIT =  00002
```

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Figure 7-10a. FAMTIN MSS TLM Ingest Processing Summary

```
LISTING   : FA1210          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :        3
SUBSYSTEM :    FMS                  GODDARD SPACE FLIGHT CENTER                   DATE : 17-SEP-81
                              LANDSAT MISSION MANAGEMENT FACILITY                 TIME :     09:35

                    ** MSS TELEMETRY INGEST (FAMTIN) PROCESSING SUMMARY

RUN PROCESSING SUMMARY
NUMBER OF DIRECTORIES PROCESSED = 00003
NUMBER OF FILES PROCESSED       = 00008
NUMBER OF DIRECTORIES DELETED   = 00001
NUMBER OF DIRECTORIES REWRITTEN = 00002
```

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Figure 7-10b. FAMTIN MSS TLM Ingest Summary

```
SMETN    TELEMETRY DIRECTORY FILE = TOM001JHC
SMETN    NUMBER OF ENTRIES = 00004
FAMTIN   DATA FILE   GENERATION DATE   INTERVAL START     INTERVAL STOP     STATUS
FAMTIN    T4M001      81264140401       81264129101444     81264129204555    THM
FAMTIN    T4M002      81264140401       81264129101444     81264129306555    THM
FAMTIN    T4M003      81264140401       81264040000444     81264040104555    THM
FAMTIN    T4M004      81266060401       81266040003444     81266040201555    THM
FAMTIN   ENTER Y TO PROCESS THIS DIRECTORY - ENTER N TO BYPASS.
FAMTIN   Y
FAMTIN   WARNING: INVALID DIRECTORY HEADER RECORD TYPE (STDYHDR                                   ) -- BYPASSED.
FAMTIN   WARNING: INVALID ORIGIN CODE (EOS) - FILE BYPASSED.
FAMTIN   WARNING: INVALID DESTINATION CODE (EES) - FILE BYPASSED.
FAMTIN   WARNING: INVALID DATA FILE GENERATION DATE/TIME (            ) - FILE BYPASSED.
FAMTIN   ERROR: INVALID FILE TYPE (SELECTD SSS TELEMTRY DATA) - FILE BYPASSED.
FAMTIN   ERROR: INVALID TELEMETRY DATA FILE RECORD TYPE (XFID).
FAMTIN   WARNING: INVALID INTERVAL START TIME (81150264540555) -- FILE BYPASSED.
FAMTIN   WARNING: INVALID INTERVAL STOP TIME (8115122454655F) -- FILE BYPASSED.
FAMTIN   WARNING: INVALID EPOCH EMIS SOURCE (A) -- FILE BYPASSED.
FAMTIN   WARNING: INVALID MISSION NUMBER (3) -- FILE BYPASSED.
FAMTIN   ERROR: INVALID ORBIT NUMBER IN DIRECTORY RECORD (A0075).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T1M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID TELEMETRY DATA FILE RECORD TYPE (XGJF).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T1M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID CALIBRATION LAMPS ON/OFF SWITCH VALUE (2).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID CALIBRATION LAMPS A/B SWITCH QUAL INDICATOR (3).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID SHUTTER MONITOR A/B SWITCH QUALITY INDICATOR (4).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T1M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID SCAN MONITOR A/B SWITCH VALUE (5).
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID MUX LINEAR COMPRESSED SWITCH VALUE = 7
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID OBC TIME CODE - SECONDS = 5A
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ACS EULER PARAM EPA1 - OCCURENCE #1ST - INVALID NUMBER = 2*22222
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ACS EULER PARAMETER - EPA2 - OCCURENCE #1ST - INVALID SIGN = X
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ACS EULER PARAM EPA3 - OCCURENCE #1ST - INVALID NUMBER = 444B444
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ACS EULER PARAM EPA2 - OCCURENCE #2ND - INVALID NUMBER = 2222X22
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR : INVALID ACS ROLL GYRO BIAS COMPENSATION =        33X33
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID ACS YAW GYRO BIAS COMPENSATION QUALITY INDICATOR =  X
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID 1ST ACS GYRO RATE COUNT - CNGY - 4TH OCCURENCE = 33B33
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ECI Z-AXIS COMPONENT FS POSITION - 1ST OCCURENCE - INVALID NUMBER = 3333333X33
FAMTIN   DIRECTORY = TOM001JHC  FILE = T1M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ECI  Y-AXIS COMPONENT FS POSITION - 2ND OCCURENCE - INVALID SIGN = X
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ECI  X-AXIS COMPONENT FS POSITION - 3RD OCCURENCE - INVALID SIGN = X
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: INVALID ECI Y-AXIS COMPONENT FS POSITION - 3RD OCCURENCE - INVALID QUAL INDIC = X
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00001
FAMTIN   ERROR: ECI Z-AXIS COMPONENT FS VELOCITY -      OCCURENCE - INVALID SIGN =
FAMTIN   DIRECTORY = TOM001JHC  FILE = T4M001      RECORD NUMBER = 00008
FAMTIN   WARNING: TELEMETRY FILE (T4M001  ) FAILED EDIT -- SEE ERROR REPORT -- FILE BYPASSED.
```

```
LISTING   : FA1220          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :         1
SUBSYSTEM :    FMS                    GODDARD SPACE FLIGHT CENTER                  DATE : 17-SEP-81
                                   LANDSAT MISSION MANAGEMENT FACILITY             TIME :     09:35

                                ** MSS TELEMETRY INGEST (FAMTIN) ERROR SUMMARY **

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID TELEMETRY DATA FILE RECORD TYPE (XOJF).

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID CALIBRATION LAMPS ON/OFF SWITCH VALUE (2).

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID CALIBRATION LAMPS A/B SWITCH QUAL INDICATOR (3).

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID SHUTTER MONITOR A/B SWITCH QUALITY INDICATOR (4).

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID SCAN MONITOR A/B SWITCH VALUE (5).

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID MUX LINEAR COMPRESSED SWITCH VALUE = 7

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID DPU TIME CODE - SECONDS = 5A

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ACS EULER PARAM EPA1 - OCCURENCE #1ST - INVALID NUMBER = 2*22222

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ACS EULER PARAMETER - EPA2 - OCCURENCE #1ST - INVALID SIGN = X

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ACS EULER PARAM EPA3 - OCCURENCE #1ST - INVALID NUMBER = 444B444

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ACS EULER PARAM EPA2 - OCCURENCE #2ND - INVALID NUMBER = 2222X22

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR : INVALID ACS ROLL GYRO BIAS COMPENSATION =        33X33

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID ACS YAWL GYRO BIAS COMPENSATION QUALITY INDICATOR =  X

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: INVALID 1ST ACS GYRO RATE COUNT - CNGY - 4TH OCCURENCE = 33B33

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ECI Y-AXIS COMPONENT FS POSITION - 1ST OCCURENCE - INVALID NUMBER = 3333333X33

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ECI  Y-AXIS COMPONENT FS POSITION - 2ND OCCURENCE - INVALID SIGN = X

DIRECTORY = TDM001JRC  FILE = T4M001     RECORD NUMBER = 00001
ERROR: ECI  X-AXIS COMPONENT FS POSITION - 3RD OCCURENCE - INVALID SIGN = X
```


Figure 7-10d. FAMTIN MSS TLM Ingest Error Summary

7.4.3 PCP PHASE 1

PCP Phase 1 does the initial processing of the telemetry data, including calibration, smoothing, outlier detection, and determination of spacecraft operating mode(s). The available raw telemetry files are identified in the "To be processed" index file. Once activated PCP Phase 1 sequentially processes all the data identified in the index file. As the processing for each raw telemetry file is completed, the results are stored, the entry in the index file is deleted and the name of the output processed telemetry file is put into another index file (called the "PCS Completed" index file, with file name CURINX.CRC), which is used in PCP Phase 2.

Figure 7-11 shows the basic flow for PCP Phase 1. An example of a processing summary report is shown in Figure 7-12. Two copies will be generated for each raw telemetry file processed; one for QA and one to be retained in the operations area. The operator will notify QA when reports are available. If any errors are encountered an error summary report, shown in Figure 7-13, is generated. These errors should be brought to the attention of the operations supervisor immediately.

The CPDS which gives more detail about the PCS Phase 1 software unit is LSD-IGF-CPD-3015.

7.4.4 PCP PHASE 1 COMPLETION

The PCP Phase 1 completion process takes the output from PCP Phase 1 and updates the data base with status information about the raw telemetry data processing.

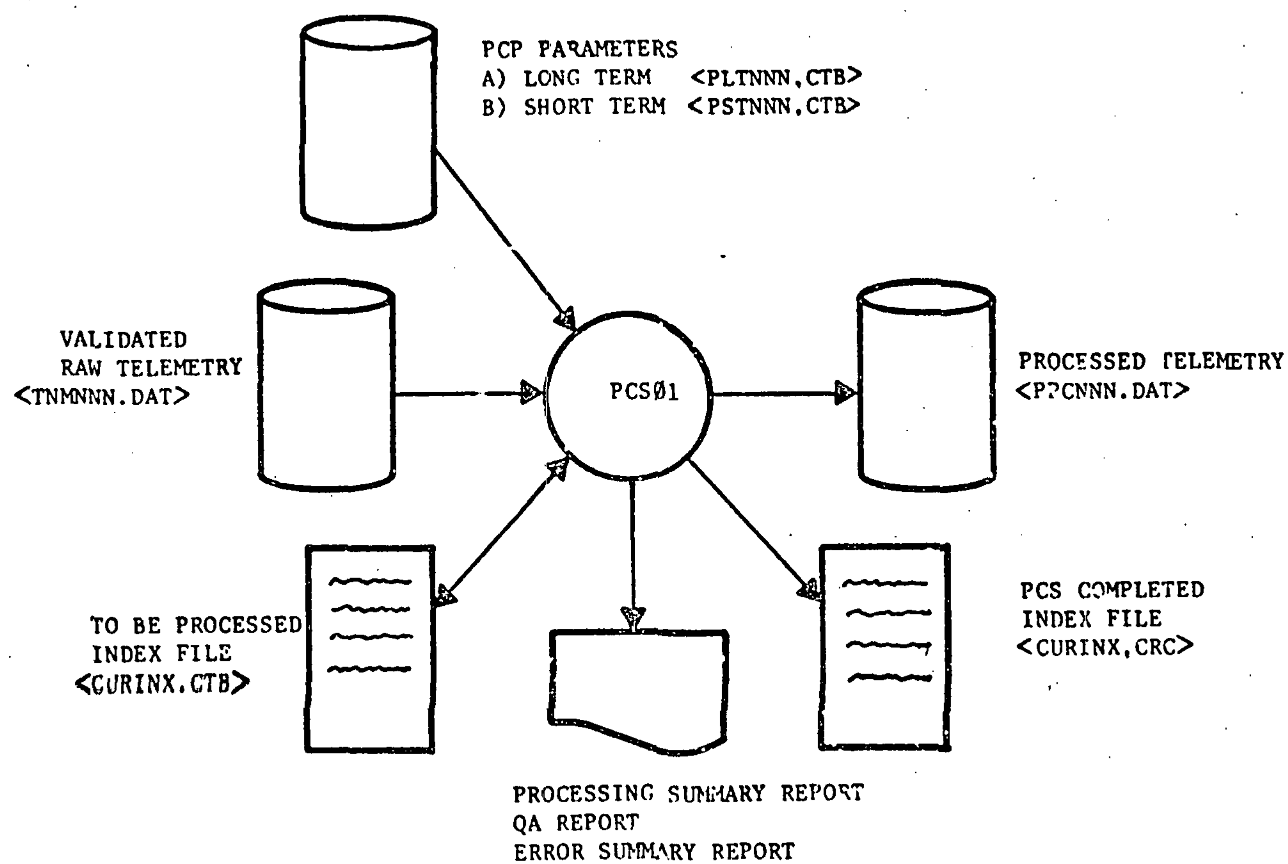

Figure 7-11. PCP Phase 1 Process

```
PCS150                              PCS PHASE ONE PROCESSING SUMMARY REPORT                                       PAGE 1
DATE: 16-OCT-81                                                                                                   MMF-M
TIME: 10:28:39                      PROCESS REQUEST ID: FATCH                                    PCS BASELINE: 18-AUG-81
SC. ID.: 928                        LT PARM FILE: PL4929.CTB                                    ST PARM FILE: PS4929.CTB
INTERVAL START TIME:   :  :  :                               INTERVAL FINISH TIME:   :  :  :
PROCESSING START TIME: 16-OCT-81 10:28:30                    PROCESSING STOP TIME: 16-OCT-81 10:28:34
INPUT PCD FILE:        T4 928.DAT                            EPHEMERIS SOURCE:
DATA QUALITY SUMMARY:
TOTAL INPUT QUALITY ERRORS:   0
RAPS:   0     TIME:   0    EULER PARMS:   0    OTHER ACS:   0    ECI POSITION:   0    ECI RATE:   0
OUTPUT QUALITY INDICATORS:
EPHEMERIS DATA ERRORS:     0                                 ATTITUDE DATA ERRORS:     0
TOTAL POINTS:              0                                 TOTAL POINTS:             0
REJECTED POINTS:           0                                 REJECTED POINTS:          0
MISSING POINTS:            0                                 MISSING POINTS:           0
ACC. X.:  .0000E+00  Y:  .0000E+00  Z:  .0000E+00            ACC. PITCH:  .0000E+00  ROLL:  .0000E+00  YAW:  .0000E+00
RADIUS:   MAX:  .0000000E+00   MIN:  .0000000E+00            MAX EXCURSION PITCH:  .0000E+00  ROLL:  .0000E+00  YAW:  .0000E+00
VELOCITY: MAX:  .0000000E+00   MIN:  .0000000E+00            MAX RATE      PITCH:  .0000E+00  ROLL:  .0000E+00  YAW:  .0000E+00
PROCESSING ERRORS:         0                                 PROCESSING ERRORS:       0
FATAL ERROR:             1                                   FATAL ERROR:           0
TOTAL PROCESSING ERRORS:   1
OUTPUT PCD FILE:          PPC9.  .DAT
```

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Figure 7-12. PCP Phase 1 Processing Summary and Quality Assurance Report

```
PCS1ER                              PCS PHASE ONE ERROR SUMMARY REPORT                                          PAGE 1
DATE: 16-OCT-81                                                                                                 MMF-M
TIME: 10:28:30                      PROCESS REQUEST ID: BATCH                                   PCS BASELINE: 18-AUG-81

                                    NONFATAL ERRORS ENCOUNTERED
                                    ---------------------------

FATAL ERROR IN SUBROUTINE PRMINP
DESCRIPTION:  FILE ERROR ON CHANNEL                   26
```


Figure 7-13. PCP Phase 1 Error Summary Report

This process is broken into two parts; the first examines the processed telemetry files for format problems and sends a directory of these files to the data base, and the second determines which WRS scenes are contained in the processed telemetry interval, compares them with the list of desired scenes and updates their status.

Figure 7-14 shows the basic flow for PCP Phase 1 completion. Examples of the reports generated are given in Figures 7-15a through 7-15d.

The CPDSs which give more detail about the two software units in this process and which list the possible error messages and recommended actions are FATEPK -- LSD-MMF-CPD-2003,, and FATECP - LSD-MMF-CPD-2100.

7.4.5 PCP PHASE 2 SCHEDULING

PCP Phase 2 scheduling involves fetching and processing the HDT-RM outputs from the image data acquisition function, comparing the video data acquired with the desired scene list and setting up the process request for the PCP Phase 2 process. This process consists of four parts: the first retrieves data from DRRTS over Decnet, including the HDT-RM directory, the HDT-RM quality file, and the image data quality file; the second and third parts validate this data and put it into the data base; and the fourth part generates the process request for PCP Phase 2 using the HDT-RM directory and the list of desired scenes, which was updated in the PCP Phase 1 completion process.

Figure 7-16 shows the basic flow for PCP Phase 2 scheduling. Examples of the reports from the various parts of this process are shown in Figures 7-17a through 7-17e.

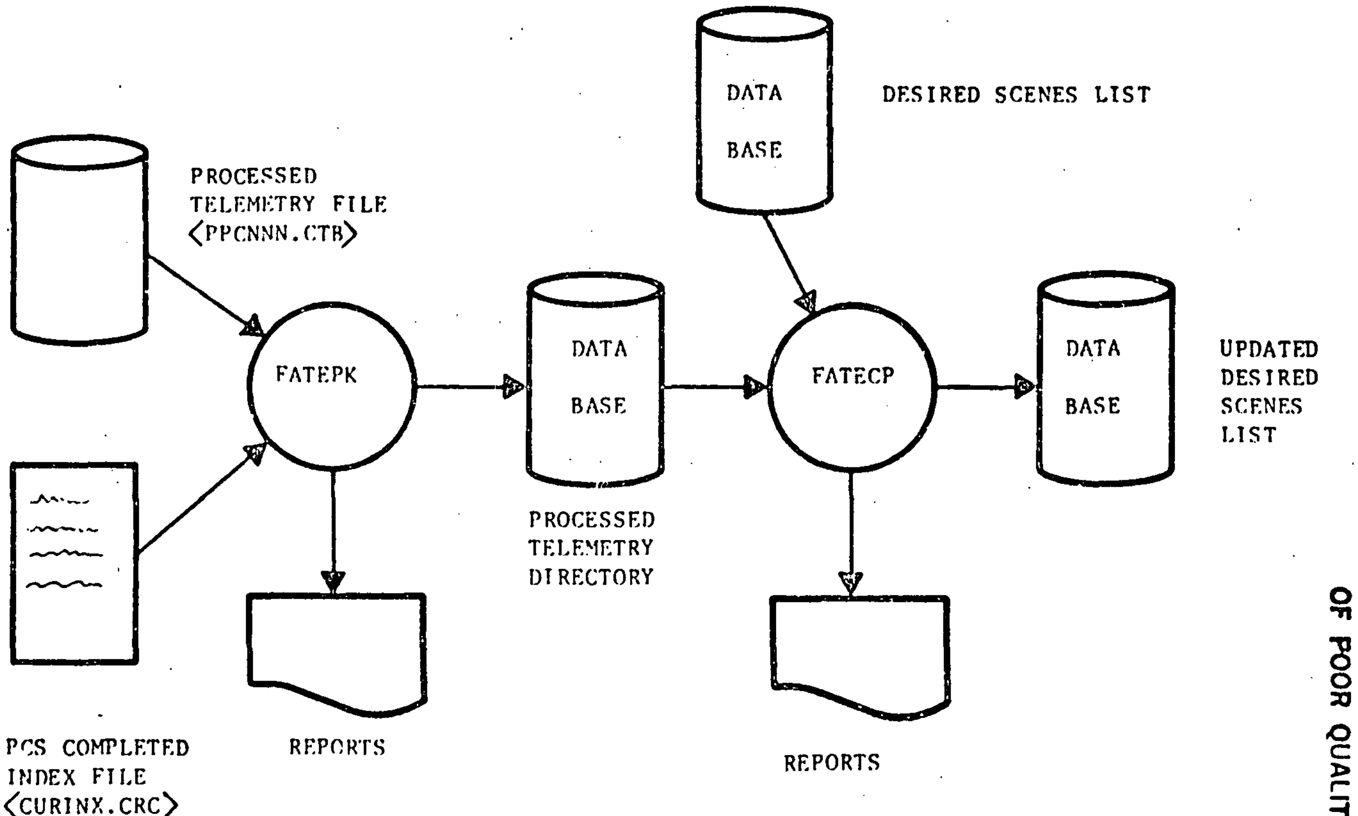

Figure 7-14. PCP Phase 1 Completion Process

```
EL...NG   : FAO900              NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :          1
SUBSYSTEM :     FMS                     GODDARD SPACE FLIGHT CENTER                    DATE : 17-SEP-81
                                    MULTISATELLITE MISSION MANAGEMENT FACILITY         TIME :      09:36

                      TELEMETRY/EPHEMERIS PACKAGING (FATEPK) PROCESSING SUMMARY

******************************************************************************************************

FILE: PPC001     INTERVAL START =   81264120101444
                 INTERVAL STOP  =   81264120204555

NUMBER OF EPHEMERIS RECORDS     =   00005
NUMBER OF ATTITUDE RECORDS      =   00005
NUMBER OF HOUSEKEEPING RECORDS  =   00006

NUMBER OF TRANSFER HEADER ERRORS ...: 00000
NUMBER OF DIRECTORY RECORD ERRORS...: 00000
NUMBER OF EPHEMERIS HEADER ERRORS...: 00000
NUMBER OF EPHEMERIS DATA ERRORS.....: 00000
NUMBER OF ATTITUDE HEADER ERRORS....: 00000
NUMBER OF ATTITUDE DATA ERRORS......: 00000
NUMBER OF HOUSEKEEPING HEADER ERRORS: 00000
NUMBER OF HOUSEKEEPING DATA   ERRORS: 00001
INFO : FILE FAILED EDIT -- INTERVAL NOT STORED IN  DATA BASE.

******************************************************************************************************

FILE: PPC002     INTERVAL START =   82267070000001
                 INTERVAL STOP  =   82267071035001

NUMBER OF EPHEMERIS RECORDS     =   00005
NUMBER OF ATTITUDE RECORDS      =   00005
NUMBER OF HOUSEKEEPING RECORDS  =   00008

NUMBER OF TRANSFER HEADER ERRORS ...: 00000
NUMBER OF DIRECTORY RECORD ERRORS...: 00000
NUMBER OF EPHEMERIS HEADER ERRORS...: 00000
NUMBER OF EPHEMERIS DATA ERRORS.....: 00000
NUMBER OF ATTITUDE HEADER ERRORS....: 00000
NUMBER OF ATTITUDE DATA ERRORS......: 00000
NUMBER OF HOUSEKEEPING HEADER ERRORS: 00000
NUMBER OF HOUSEKEEPING DATA   ERRORS: 00000
INFO : INDICATED INTERVAL STORED IN DATA BASE.

******************************************************************************************************

******************************************************************************************************

NUMBER OF FILES PROCESSED...........: 00009
NUMBER OF FILES STORED IN DATA BASE.: 00007
NUMBER OF FILES PASSED EDIT.........: 00007
NUMBER OF FILES FAILED EDIT.........: 00001
NUMBER OF REDUNDANT FILES...........: 00002
NUMBER OF FILES OVERWRITTEN.........: 00002
NUMBER OF REDUNDANT FILES BYPASSED..: 00000
```

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Figure 7-15a. FATEPK TLM/EPHEM Packaging Processing Summary

```
FATEPK    FILE: PPC001  RECORD TYPE: XHKO  RECORD #: 00006
FATEPK    ERROR : EXPECTED RECORD COUNT EXHAUSTED BEFORE EOF DETECTED.
FATEPK    ERROR : TELEMETRY FILE ( PPC001  ) FAILED EDIT -- SEE ERROR REPORT -- FILE BYPASSED.
FATEPK
FATEPK
FATEPK    INFO: REDUNDANT TELEMETRY CONDITION :
FATEPK
FATEPK    FILE ID: PPC006
FATEPK
FATEPK                        INTERVAL START TIME          INTERVAL STOP TIME
FATEPK    DATA BASE :         81266120003434               81266120204555
FATEPK    INPUT FILE:         81266115845444               81266120420555
FATEPK
FATEPK
FATEPK    ENTER Y TO REWRITE DATA BASE INTERVAL, - N TO BYPASS.
FATEPK    Y
FATEPK
FATEPK
FATEPK    INFO: REDUNDANT TELEMETRY CONDITION :
FATEPK
FATEPK    FILE ID: PPC007
FATEPK
FATEPK                        INTERVAL START TIME          INTERVAL STOP TIME
FATEPK    DATA BASE :         81266051203464               81266051730555
FATEPK    INPUT FILE:         81266051445444               81266052130555
FATEPK
FATEPK
FATEPK    ENTER Y TO REWRITE DATA BASE INTERVAL, - N TO BYPASS.
FATEPK    Y
FATEPK    FATEPK-END OF PROCESSING
```

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Figure 7-15b. FATEPK Error Report

```
LISTING   : FA1230          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :          1
SUBSYSTEM :    FMS                   GODDARD SPACE FLIGHT CENTER                   DATE : 17-SEP-81
                                  LANDSAT MISSION MANAGEMENT FACILITY              TIME :     09:36

                     ** TELEMETRY/EPHEMERIS PACKAGING (FATEPK) ERROR REPORT **

FILE: PPC001  RECORD TYPE: XHKD  RECORD #: 00006
ERROR : EXPECTED RECORD COUNT EXHAUSTED BEFORE EOF DETECTED.
ERROR : TELEMETRY FILE ( PPC001  ) FAILED EDIT -- SEE ERROR REPORT -- FILE BYPASSED.
```

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Figure 7-15c. FATEPK TLM/EPHEM Packaging Error Report

```
LISTING    : FA0820               NATIONAL AERONAUTICS AND SPACE ADMINISTRATION           PAGE :          1
SUBSYSTEM  :    FMS                      GODDARD SPACE FLIGHT CENTER                      DATE : 17-SEP-81
                                     LANDSAT MISSION MANAGEMENT FACILITY                  TIME :      09:37

INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180412802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180402802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180392802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180342802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180372802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180362802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180352802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180342802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180332802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180322802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180312802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0180302802
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0110292801
INFORMATION: MATCHING COVERAGE FOUND FOR SCENE - 4M0110282801
```

```
LISTING    : FA0620               NATIONAL AERONAUTICS AND SPACE ADMINISTRATION           PAGE :          2
SUBSYSTEM  :    FMS                      GODDARD SPACE FLIGHT CENTER                      DATE : 17-SEP-81
                                     LANDSAT MISSION MANAGEMENT FACILITY                  TIME :      09:37

                          TELEMETRY/EPHEMERIS COMPARATOR PROCESSING SUMMARY        PROCESSING MODE: MANUAL

PROCESSING SUMMARY TOTALS:
     TOTAL SCENES PROCESSED BY OPERATOR....................   14
     TOTAL SCENES SKIPPED BY OPERATOR......................    0
     TOTAL SCENES WITH MATCHING COVERAGE...................   14
     TOTAL SCENES CANCELLED (EXCEEDS CANCEL THRESHOLD)...    0
     TOTAL SCENES EXCEEDING WARNING THRESHOLD............    0
     TOTAL SCENES WITHOUT COVERAGE AND UNDER THRESHOLDS..    0
```


Figure 7-15d. FATECP Processing Summary Reports
(Normally on two separate pages)

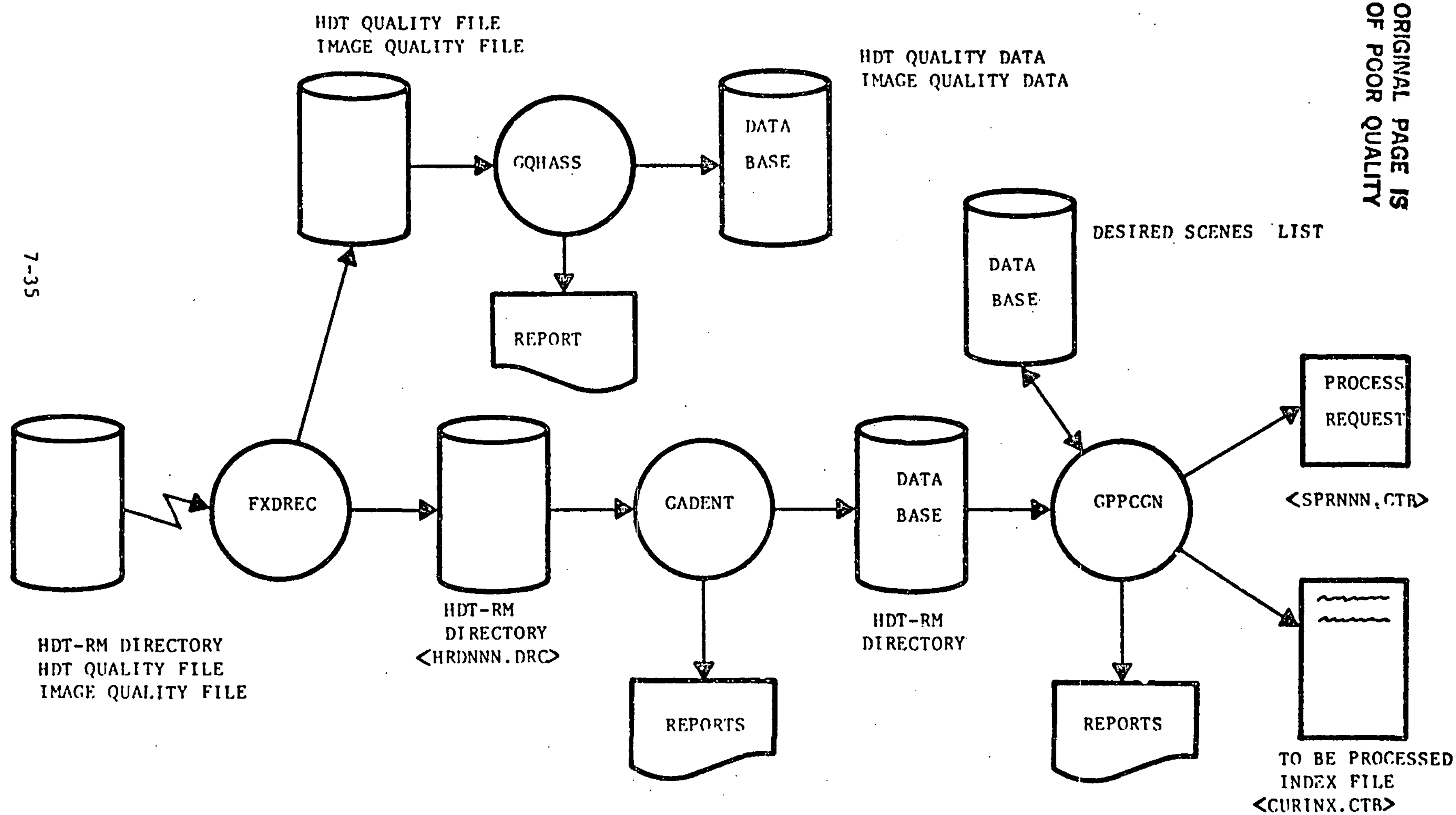

Figure 7-16. PCP Phase 2 Scheduling Process

```
LISTING   : GT0800                 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                     PAGE :         1
SUBSYSTEM :    GMS                        GODDARD SPACE FLIGHT CENTER                                DATE :  11-OCT-81
                                        LANDSAT MISSION MANAGEMENT FACILITY                          TIME :      13:43

PROCESSING MODE : AUTOMATIC                    GOHASS PROCESSING SUMMARY                     DATABASE SENSOR TYPE :      MSS

DIRECTORY   FILE        HDT-ID         SCENE-ID         COMMENTS
            NAME

   IRC     IQA001     L4MHA8126804                      INFO: NEW BTI-ASSESSED-TAPE RECORD CREATED IN THE DATABASE
                                     4M1862310055.      INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BIO-IMAGE-QUALITY RECORD CREATED IN THE DATABASE
                                     4M1862310056       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BIO-IMAGE-QUALITY RECORD CREATED IN THE DATABASE
                                     4M1862310057       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BIO-IMAGE-QUALITY RECORD CREATED IN THE DATABASE
                                     4M1862310058       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BIO-IMAGE-QUALITY RECORD CREATED IN THE DATABASE
                                                        INFO: FILE SUCCESSFULLY DELETED FROM CURINX AND ADDED TO DELINX

   IRC     PAD001     L4MHA8126803                      INFO: NEW BTI-ASSESSED-TAPE RECORD CREATED IN THE DATABASE
                                     4M1872440060       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BPA-ASSESSED-DATA RECORD CREATED IN THE DATABASE
                                     4M1872440061       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BPA-ASSESSED-DATA RECORD CREATED IN THE DATABASE
                                     4M1872440062       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BPA-ASSESSED-DATA RECORD CREATED IN THE DATABASE
                                     4M1872440063       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BPA-ASSESSED-DATA RECORD CREATED IN THE DATABASE
                                     4M1872440064       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                                                        INFO: NEW BPA-ASSESSED-DATA RECORD CREATED IN THE DATABASE
                                                        INFO: FILE SUCCESSFULLY DELETED FROM CURINX AND ADDED TO DELINX

                      L4MHR8126801   4M1812130021       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126801   4M1812130022       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126801   4M1812130023       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126801   4M1812130024       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126801   4M1812130025       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126802   4M7892430076       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126802   4M1892430077       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
                      L4MHR8126802   4M1892430078       INFO: NEW BSC-ASSESSED-SCENE RECORD CREATED IN THE DATABASE
INFO: NUMBER OF FILES PROCESSED:              2

INFO: NUMBER OF FILES REJECTED:               0

INFO: TOTAL NUMBER OF FILES PROCESSED:        2

GOHASS-END OF PROCESSING
```

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Figure 7-17a. GQHASS Processing Summary

```
TING   : GT0800               NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                              P
SYSTEM :    GMS                       GODDARD SPACE FLIGHT CENTER                                        D
                                   LANDSAT MISSION MANAGEMENT FACILITY                                   T

CESSING MODE : AUTOMATIC                   GQHASS PROCESSING SUMMARY              --  DATABASE SENSOR T

ECTORY    FILE          HDT-ID          SCENE-ID         COMMENTS
          NAME

IRC       PAD004                                         ERROR: INVALID STANDARD HEADER RECORD TYPE: STR HDR
                                                         ERROR: INVALID HEADER RECORD TYPE:  3AHD
                  L4THR8137801                           ERROR: THE SENSOR OF THE TAPE ID DOES NOT MATCH WITH
                                                         ERROR: INVALID HDT-ID - INVALID STANDARD DATE DAY
                                                         ERROR: INVALID PROCESSING TIME - INVALID MINUTES IN S
                                                         ERROR: INVALID INPUT DATA SOURCE: 60M FOR CURRENT WOR
                                                         ERROR: INVALID DATA RATE: 123E5
                                                         ERROR: INVALID STRING ID DRS FOR WORK STATION DHTS
                                                         ERROR: 5 SECOND PULSE SAMPLE TYPE DO NOT COME FROM MI
                                                         ERROR: INVALID PROCESSING MODE: IT ,IN OR OT(OUT) EXP
                                                         ERROR: INVALID PROCESS USING HDT:  DUTACQ FROM SUBSYS
                                                         ERROR: INVALID SCENE RECORD TYPE:  P4SC
                                                         ERROR: 5 SECOND PULSE SAMPLE TYPE DO NOT COME FROM MI
                                  RUQIRWLJDFKE           ERROR: SCENE-ID NOT EXPECTED FROM FILE FROM DRTTS,
                                                         ERROR: INVALID IRIG TIME - INVALID DAYS FOR IRIG DATE
                                                         ERROR: INVALID NUMBER OF CORRECTED ERROR COUNT: 10345
                                                         ERROR: INVALID NUMBER OF UNCORRECTED ERROR COUNT: 113
                                                         ERROR: FILE REJECTED DUE TO ERROR(S) ABOVE

0 DUMMY BSC-ASSESSED-SCENE RECORD CREATED

UM OF FILES PROCESSED:               0

UMBER OF FILES REJECTED:             1

TAL NUMBER OF FILES PROCESSED:       1

END OF PROCESSING
```

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Figure 7-17b. GQHASS Processing Summary

```
LISTING   : GA0130              NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                PAGE :        1
SUBSYSTEM :    GKS                        GODDARD SPACE FLIGHT CENTER                        DATE : 17-SEP-81
                                     LANDSAT MISSION MANAGEMENT FACILITY                     TIME :     09:44

                                           GADENT PROCESSING SUMMARY

PROCESSING MODE:  AUTOMATIC                                                          DATA BASE TYPE:    MSS

INFO: PROCESSING OF HRD001DRC FILE STARTED.
INFO: VERIFICATION SUCCESSFUL. APPLICATION PROCESS BEGINS.
WARNING: NO QUALITY INFORMATION FOR INTERVALS01. ASSUMED GOOD.
INFO: FILE HRD001 HAS BEEN SUCCESSFULLY ENTERED INTO DATA BASE
      NUMBER OF INTERVALS READY FOR INVERSION = 01
      NUMBER OF INTERVALS CANCELLED = 00

INFO: PROCESSING OF HRD002DRC FILE STARTED.
INFO: VERIFICATION SUCCESSFUL. APPLICATION PROCESS BEGINS.
WARNING: NO QUALITY INFORMATION FOR INTERVALS01. ASSUMED GOOD.
WARNING: NO QUALITY INFORMATION FOR INTERVALS02. ASSUMED GOOD.
INFO: FILE HRD002 HAS BEEN SUCCESSFULLY ENTERED INTO DATA BASE
      NUMBER OF INTERVALS READY FOR INVERSION = 02
      NUMBER OF INTERVALS CANCELLED = 00

INFO: PROCESSING OF HRD003DRC FILE STARTED.
INFO: VERIFICATION SUCCESSFUL. APPLICATION PROCESS BEGINS.
WARNING: NO QUALITY INFORMATION FOR INTERVALS01. ASSUMED GOOD.
WARNING: NO QUALITY INFORMATION FOR INTERVALS02. ASSUMED GOOD.
INFO: FILE HRD003 HAS BEEN SUCCESSFULLY ENTERED INTO DATA BASE
      NUMBER OF INTERVALS READY FOR INVERSION = 02
      NUMBER OF INTERVALS CANCELLED = 00

GADENT -- END OF PROCESSING
```

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LISTING : DU0190
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 17-SEP-81
TIME : 09:44

RETRANSMITTAL LOG - GADENT

HDTR-ID	INTERVAL NUMBER	DATA SOURCE	INTERVAL SPACECRAFT START TIME	INTERVAL SPACECRAFT STOP TIME	INTERVAL IRIG START TIME	INTERVAL IRIG STOP TIME

NO INTERVALS HAVE BEEN RETRANSMITTED

Figure 7-17d. GADENT Retransmittal Log

LISTING : GP1660
SUBSYSTEM : GES

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 16-OCT-81
TIME : 05:28

OPERATIONAL MODE: MANUAL

GPPCGN PROCESSING SUMMARY

DATABASE SENSOR TYPE :MSS

PROCESS REQUEST ID	HDT-R ID	PROCESS REQUEST FILE NAME	INTERVAL START TIME	INTERVAL STOP TIME	# OF SCENES
PCSP12890001	L4MHA8125301	SPR001	81242090000000	81242090500000	01
PCSP12890002	L4MHA8125201	SPR002	81242070000000	81242070500000	01
PCSP12890003	L4MHA8125101	SPR003	81241090000000	81241090500000	01
PCSP12890004	L4MHA8125001	SPR004	81240080000000	81240080500000	01
PCSP12890005	L4MHA8125401	SPR005	81244120000000	81244120500000	01

GPPCGN-END OF PROCESSING

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Figure 7-17e, GPPCGN Processing Summary

The CPDSs which give more detail about the four software units in this process and which list the possible error messages and recommended actions are: GXDREC - LSD-MMF-CPD-2076, GQHASS - LSD-MMF-CPD-2074, GADENT - LSD-MMF-CPD-2033, and GPPCGN - LSD-MMF-CPD-2140.

7.4.6 PCP PHASE 2

In PCP Phase 2 the processed telemetry that covers desired scenes for which video data has been acquired is converted to parameters which will be used to produce geometric correction data in the MSS archive generation function. These parameters include the scene center, band-line adjustments, NASA scene ID, and spacecraft state vector departures from nominal. The process requests (PR) generated in PCP Phase 2 scheduling are used to drive PCP Phase 2. The PR contains the names of the desired scenes for which video data and processed telemetry data is available and points to the index file generated by the PCP Phase 1 completion step, which gives the name of the associated processed telemetry data file. Upon successful completion of a process request, three index files are accessed: the process request entry is deleted from the "To be processed" index file, the names of the process request feedback file and the correction data file are added to the "PCS completed" index file, and the name of the process request file is added to the "To be deleted" index file. Once activated, PCP Phase 2 sequentially processes all the available process requests.

Figure 7-18 shows the basic flow for PCP Phase 2. An example of a processing summary report is shown in Figure 7-19. Two copies will be generated for each processed telemetry file processed; one for QA and one to be retained in the operations area. The operator will notify QA when reports are available. If any errors are encountered, an error summary report, shown in Figure 7-20, is generated. These errors should be brought to the attention of the operations supervisor immediately.

The CPDS which gives more detail about the PCS Phase 2 software unit is LSD-IGF-CPD-3016.

7.4.7 PCP PHASE 2 COMPLETION

The PCP Phase 2 completion process wraps-up the PCP function by deleting intermediate files that are no longer needed and by identifying data that is ready to be utilized in the archive generation scheduling function.

Figure 7-21 shows the basic flow for PCP Phase 2 completion. An example of the processing summary report generated in this process is shown in Figure 7-22.

The CPDS which gives more detail about the software unit in this process and which lists the possible error messages and recommended actions is: LSD-MMF-CPD-2142..

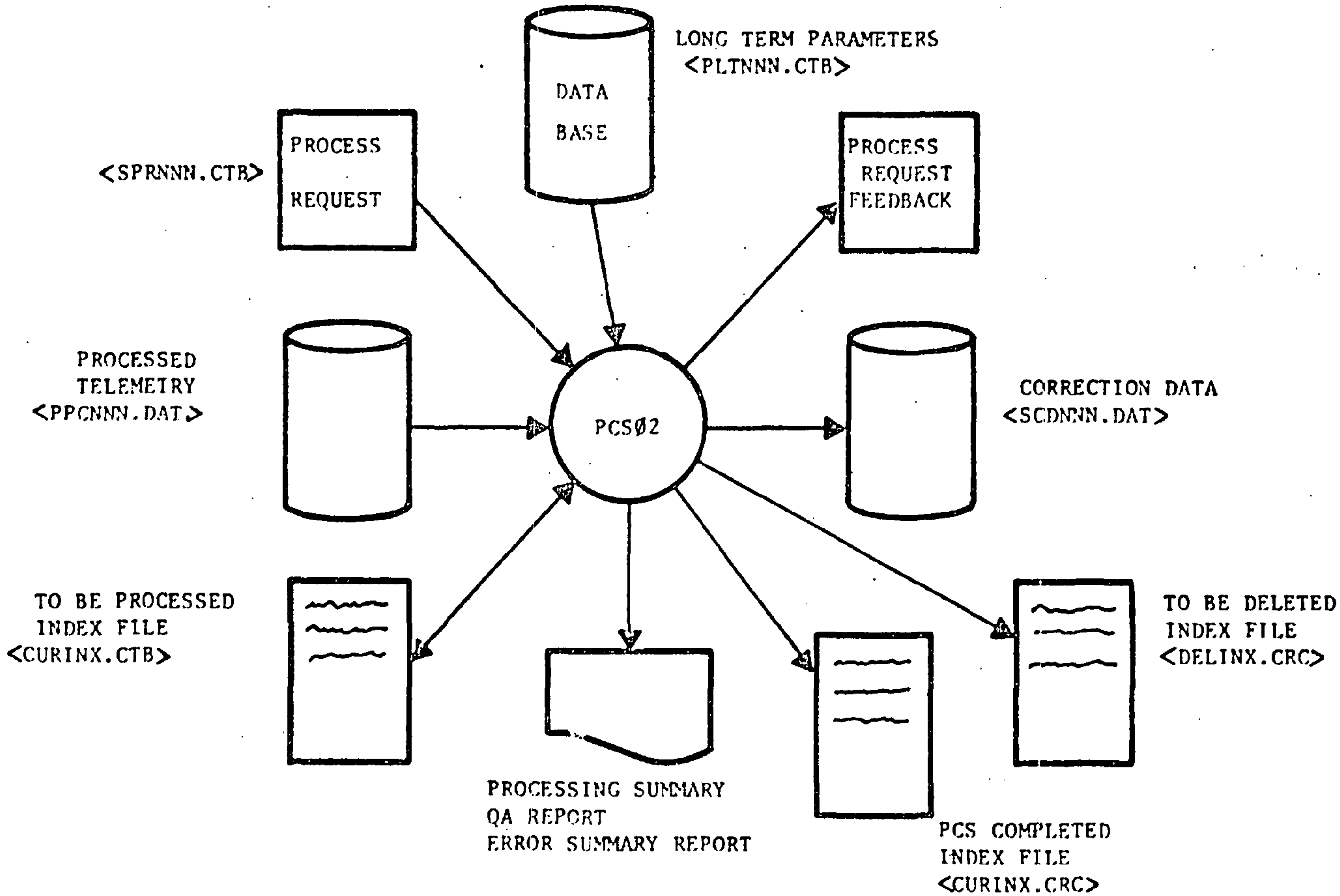

Figure 7-18. PCP Phase 2 Process

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```
PCS250                        PCS PHASE TWO PROCESSING SUMMARY REPORT                                              PAGE 1
DATE:  6-OCT-81                                                                                                    AMF-M
TIME: 15:11:33                PROCESS REQUEST ID: SPR001,CTB                                      PCS BASELINE: 20AUG81
SEQ. NO.: 920                 LT PARM FILE: PL4928,CTB                                           HOT TAPE ID: LAMHNU130012
                                   SCENE STATUS - PROCESSED CENTERS
  NASA                     ACCURACY EPHEMERIS                     ACCURACY ATTITUDE                EPH PTS  ATT PTS  PROC  SCENE
SCENE ID     ROW  PATH     X           Y           Z           PITCH       ROLL        YAW         MISS REJ MISS REJ ERROR STATUS
----------   ---  ----  ----------  ----------  ----------  ----------  ----------  ----------  ---- ---  ---- ---  ----- ------
4009600000    59   18   .4276E+03   .5602E+03   .5559E+03   .1768E-03   .7194E-03   .2101E-03     0   0     0   0     0      0
INTERVAL START TIME: 0096:14:20:16                                 INTERVAL FINISH TIME: 0096:14:28:17
PROCESSING START TIME:  6-OCT-81 15:11:14                          PROCESSING STOP TIME:  6-OCT-81 15:11:33
PROCESS REQ TYPE:        P                                         PROCESS REQ STATUS:     0
INPUT PCD FILE:          PPC920.DAT
DATA QUALITY SUMMARY:
                                          NO. OF SCENES:   1
EPHEMERIS DATA ERRORS:     0                                          ATTITUDE DATA ERRORS:     0
TOTAL POINTS:            319                                          TOTAL POINTS:          1280
REJECTED POINTS:           0                                          REJECTED POINTS:          0
ACC. X:  .2663E-02  Y:  .4066E-02  Z:  .9776E-02                      ACC. PITCH:  .1612E-05  ROLL:  .2853E-05 YAW:  .7369E-06
CORRECTION STATISTICS
MAX,RSS DEVIATION   X:  .1110549E+03  .4275815E+03                    MAX,RSS DEVIA  PITCH:  .2816225E-06  .1767761E-03
                    Y:  .1425321E+03  .5602311E+03                                    ROLL:  .1295290E-03  .7193581E-03
                    Z: -.2366176E+03  .5559039E+03                                     YAW: -.2636660E-03  .2100882E-03
PROCESSING ERRORS:         0                                          PROCESSING ERRORS:       0
FATAL ERROR:             0                                            FATAL ERROR:           0
TOTAL PROCESSING ERRORS:   0
OUTPUT CORRECTION FILE:          SCD001.DAT

LINE TEST DATA:
          INDEX FILES DIFFERENCES:                 7
          CORRECTION DATA FILE DIFFERENCES:       10
          PRFB FILE DIFFERENCES:                   M
```

This only appears when the Line Test is run.

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Figure 7-19. PCP Phase 2 Processing Summary Report and QA Report

```
PCS2ER                                PCS PHASE TWO ERROR SUMMARY REPORT                                          PAGE 1
DATE:  7-OCT-81                                                                                                   MMF-M
TIME: 11:40:05                        PROCESS REQUEST ID: SPR001.CTB                               PCS BASELINE: 20AUG81
                                      INPUT PCD FILE:     PPC928.DAT

                                      NONFATAL ERRORS ENCOUNTERED
                                      ---------------------------
FLOATING OVERFLOW IN SUBROUTINE  ERROR IN SUBROUTINE SCNCON      CHANNEL NUMBER      0, ERROR CODE NUMBER      13
FLOATING OVERFLOW IN SUBROUTINE  ERROR IN SUBROUTINE SCNCON      CHANNEL NUMBER      0, ERROR CODE NUMBER      13
```


Figure 7-20. PCP Phase 2 Error Summary Report

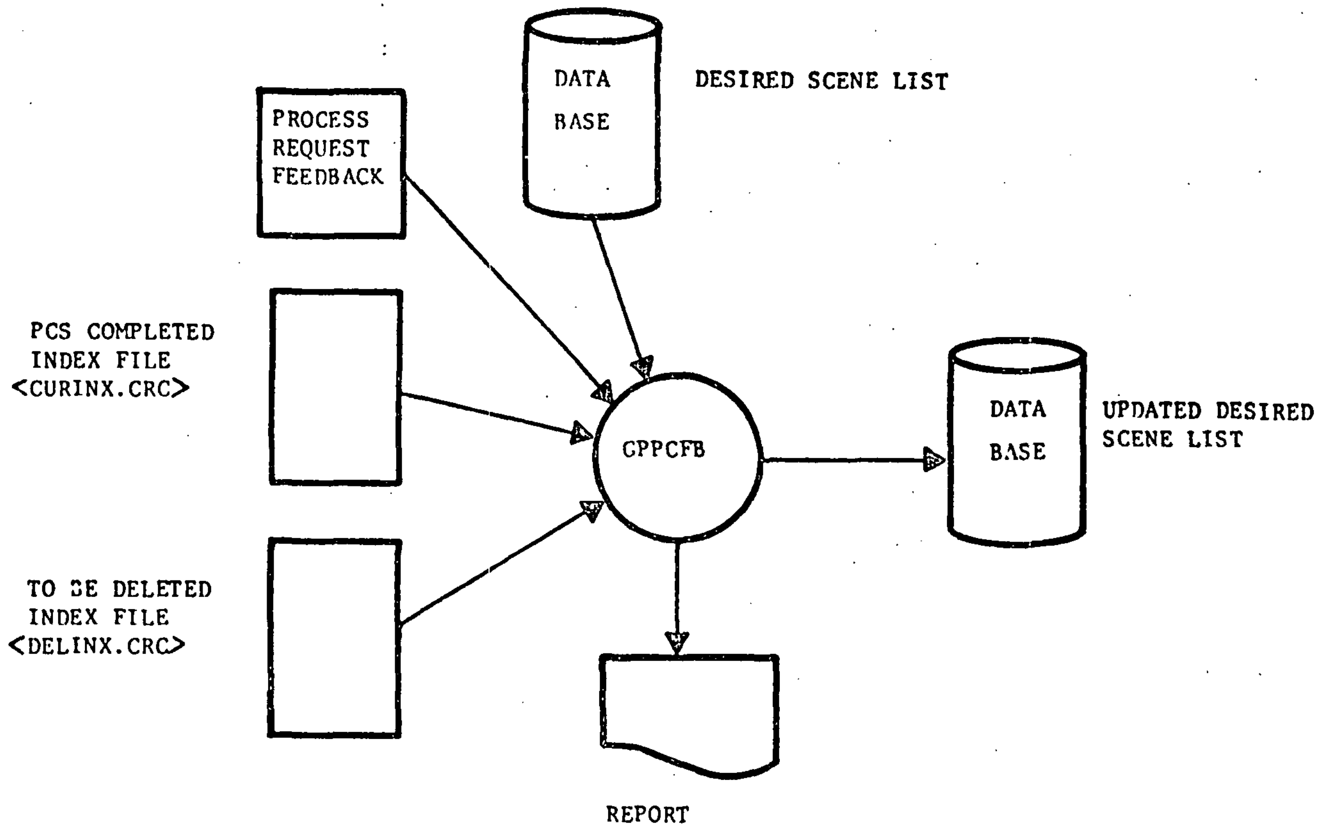

Figure 7-21. PCP Phase 2 Completion Process

```
LISTING   : GP1350          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :         1
SUBSYSTEM :    GPS                  GODDARD SPACE FLIGHT CENTER                     DATE : 16-OCT-81
                              LANDSAT MISSION MANAGEMENT FACILITY                   TIME :     05:34

PROCESSING MODE: MANUAL              GPPCEH PROCESSING SUMMARY                            SENSOR: MSS

**************************************************************************************

INFORMATION: PAYLOAD CORRECTION PROC REQ FR FILE PROCESSED:           SFR001

INFORMATION: ASSOCIATED PAYLOAD CORR PROCESS REQUEST FILE:            SPR001

INFORMATION: ASSOCIATED PAYLOAD CORRECTION FILE:                      SCP001

INFORMATION:    SCENES CANCELLED..............................                  0

INFORMATION:    SCENES FOR REWORK.............................                  0

INFORMATION:    SCENES ACCEPTED...............................                  1


INFORMATION:    TOTAL IN SFR FILE.............................                  1
**************************************************************************************

INFORMATION: PAYLOAD CORRECTION PROC REQ FR FILE PROCESSED:           SFR002

INFORMATION: ASSOCIATED PAYLOAD CORR PROCESS REQUEST FILE:            SPR002

INFORMATION: ASSOCIATED PAYLOAD CORRECTION FILE:                      SCP001

INFORMATION:    SCENES CANCELLED..............................                  1

INFORMATION:    SCENES FOR REWORK.............................                  0

INFORMATION:    SCENES ACCEPTED...............................                  0


INFORMATION:    TOTAL IN SFR FILE.............................                  1
**************************************************************************************

INFORMATION: PAYLOAD CORRECTION PROC REQ FR FILE PROCESSED:           SFR003

INFORMATION: ASSOCIATED PAYLOAD CORR PROCESS REQUEST FILE:            SPR003

INFORMATION: ASSOCIATED PAYLOAD CORRECTION FILE:                      SCP003

INFORMATION:    SCENES CANCELLED..............................                  0

INFORMATION:    SCENES FOR REWORK.............................                  0
```

Figure 7-22. Phase 2 Completion Processing Summary Report

SECTION 8

IMAGE DATA ACQUISITION

8.1 ENVIRONMENT/RESOURCES

All image data acquisition for the Landsat-D Ground Segment is performed within the Data Receive, Record and Transmit system (DRRTS) of the Image Generation Facility (IGF). See Figure 8.1-1 for the system overview. The DRRTS system is physically located for easy access to the archival area as well as the MIPS strings. This close proximity is relevant since the primary and secondary end products of image data acquisition are 28-track and 14-track high density tapes, respectively. The two types of image data acquisition to be discussed within this section are GSTDN/Foreign Ground Station and Transportable Ground Station (TGS) image data acquisition. The former arrives at DRRTS in the form of 14-track HDDR tape, while the latter is received directly from the satellite by the TGS system and is sent via cable to the DRRTS system for preliminary processing.

8.1.1 SOFTWARE ENVIRONMENT

Figure 8.1-2 illustrates the DRRTS software components (excluding RSX-11M) that make up the DRRTS software environment. The purpose of each is briefly explained in the following paragraphs. This software is divided into two groups as indicated below:

a. DRRTS application software

1. Operator interface task
2. Operation monitor tasks

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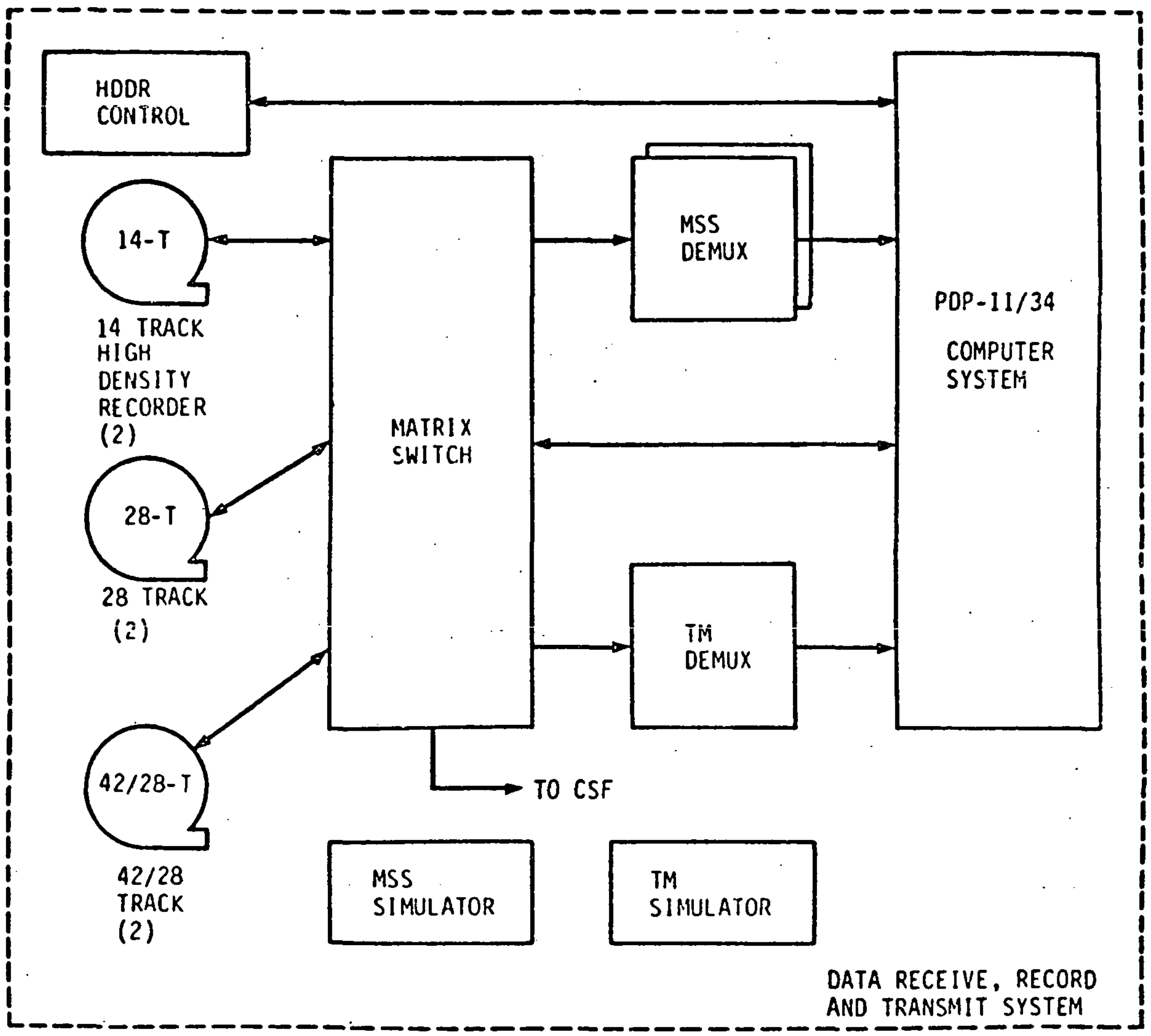


Figure 8.1-1.

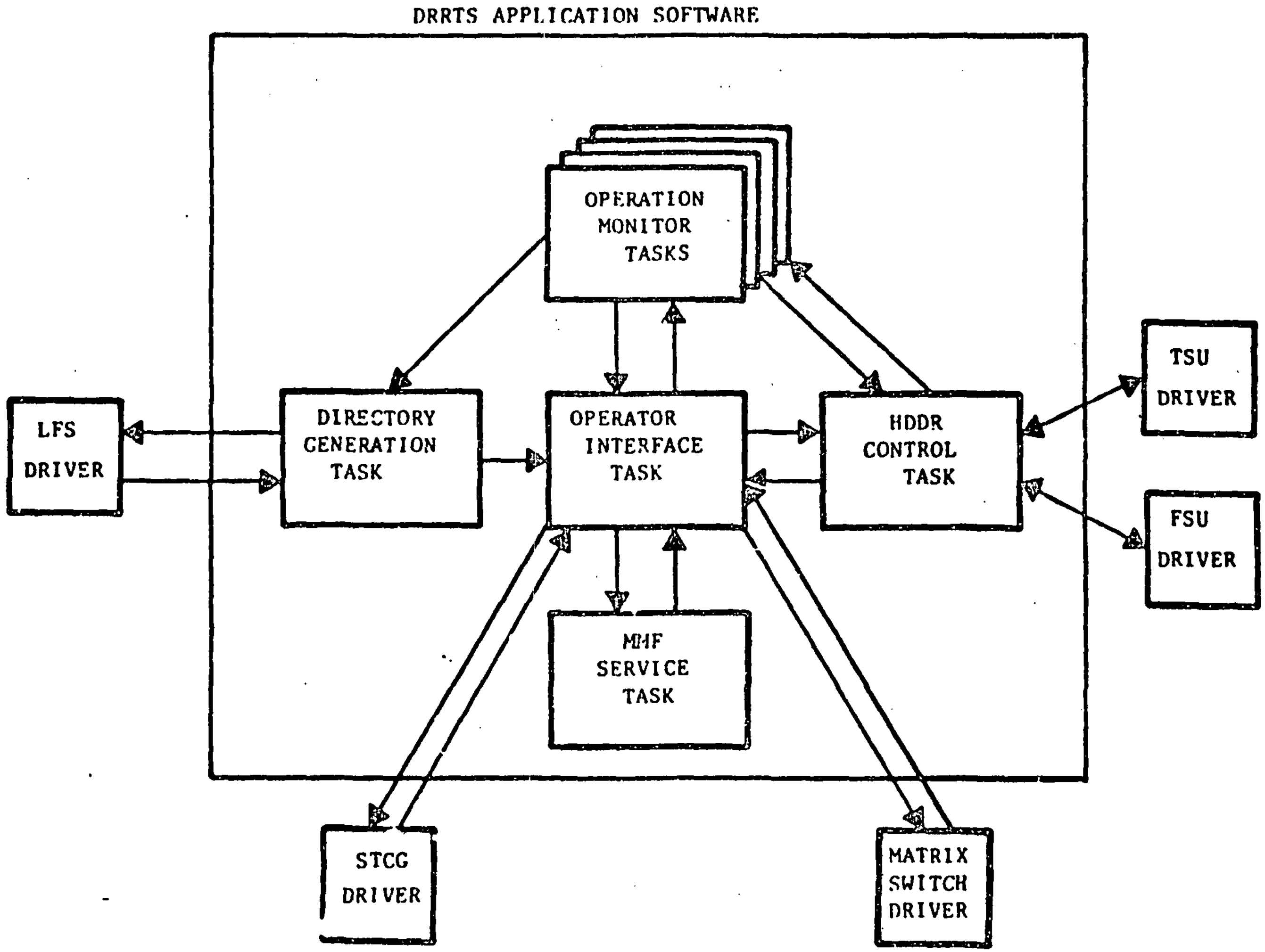


Figure 8.1-2. DRRTS Software Components

3. Directory generation tasks

4. MMF service task

b. DRRTS system software

1. Synchronized time code generator driver

2. Matrix switch driver

3. Landsat format synchronizer driver.

8.1.1.1 Operator Interface Task

The operator interface task is the DRRTS task that performs all communication with the operator. It allows the operator to initiate all operation related activities as well as manual functions and all reports.

The operator interface task is implemented in PDP-11 Fortran IV Plus and its detailed design is documented in the CPDS, LSD-IGF-CPD-3080.

8.1.1.2 Operation Monitor Task

The operation monitor tasks are the DRRTS tasks that control the active operations. One operation monitor task is required for each active operation. Since a maximum of four concurrent operations are possible, there are four operation monitor tasks.

The operation monitor task is implemented in PDP-11 Fortran IV Plus and its detailed design is documented in the CPDS, LSD-IGF-CPD-3303.

8.1.1.3 Directory Generation Task

The directory generation task is responsible for interfacing with the Demux

hardware and generating several data files during any operation that performs directory generation.

The directory generation task is implemented in PDP-11 Fortran IV Plus and its detailed design is documented in the CPDS, LSD-IGF-CPD-3003.

8.1.1.4 MMF Service Task

The MMF service task is the DRRTS task that handles file transfers with the Mission Management Facility, using either Decnet or computer compatible tape.

The MMF service task is implemented in PDP-11 Fortran IV Plus and its detailed design is documented in the CPDS, LSD-IGF-CPD-3004.

8.1.1.5 Matrix Switch Driver

The matrix switch driver is the DRRTS special purpose driver that interfaces with both the digital and analog matrix switches. These switches are used to make connections between all DRRTS special purpose hardware devices.

The matrix switch driver is implemented in PDP-11 Macro Assembly Language and its detailed design is documented in CPDS, LSD-LAS-CPD-4019.

8.1.1.6 Synchronized Time Code Generator Driver

The synchronized time code generator driver is the DRRTS special purpose driver that interfaces the synchronized time code generator. It allows reading the current time code under operator control.

The synchronized time code generator driver is implemented in PDP-11 Macro

Assembly language and its detailed design is documented in CPDS, LSD-IGF-CPD-3131.

8.1.1.7 Landsat Format Synchronizer Driver

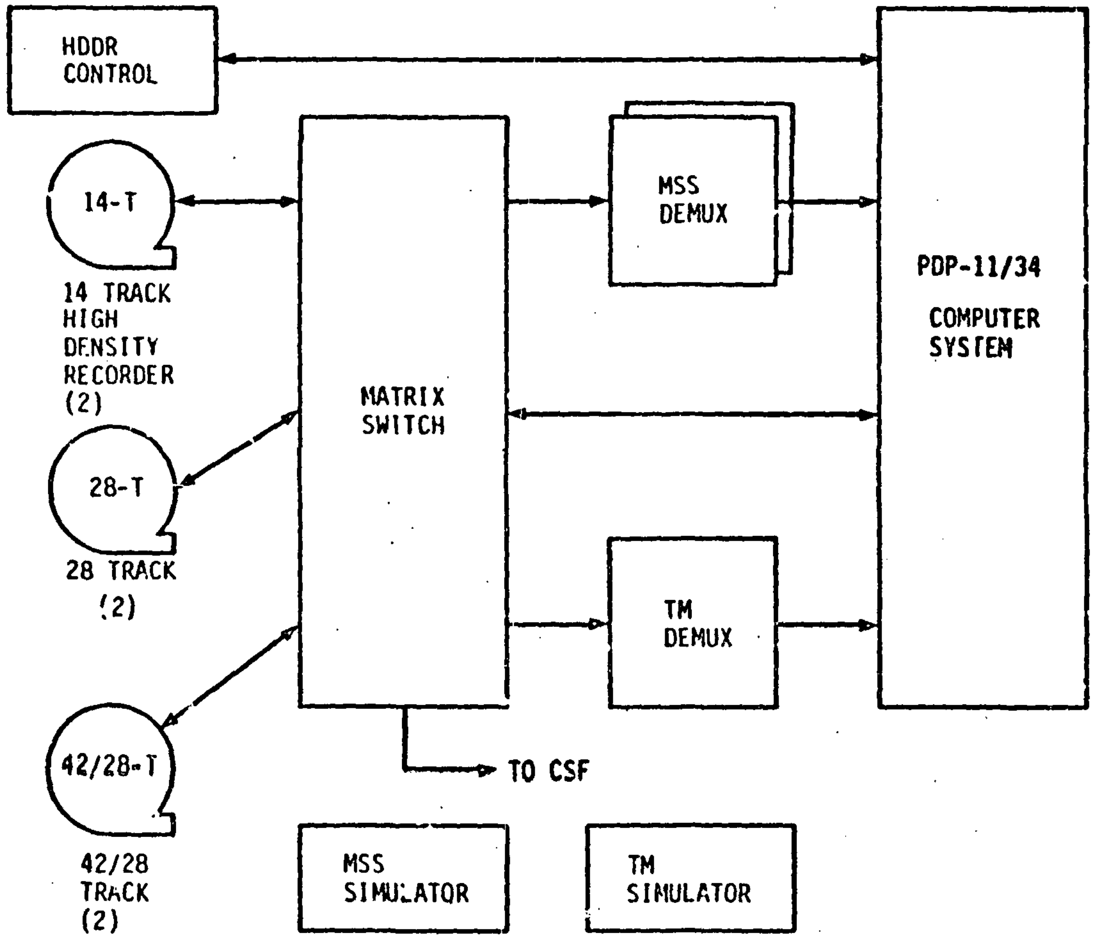
The Landsat format synchronizer driver is the DRRTS special purpose driver that interfaces the Landsat format synchronizer, which extracts selected data from the MSS data stream.

The Landsat format synchronizer driver is implemented in PDP-11 Macro Assembly language and its detailed design is documented in CPDS, LSD-IGF-CPD-3077.

8.1.2 HARDWARE ENVIRONMENT

Figure 8.1-3 illustrates the DRRTS hardware components that make up the DRRTS hardware environment. The actual hardware configuration is illustrated in Figure 8.1-4 and is comprised of the following items:

a. PDP 11/34 with 256 Kbytes of memory
b. Two RK07 disks
c. LA36 terminal (system console)
d. VT100 terminal (operator's console)
e. VT78 terminal (formatted display device)
f. HDDR control
g. 800/1600 BPI MTU
h. Two 14-track HDDR and four 28-HDDRs
i. Synchronized time code generator (STCG)
j. MSS simulator


HDDR CONTROL
14-T
14 TRACK HIGH DENSITY RECORDER (2)
28-T
28 TRACK (2)
42/28-T
42/28 TRACK (2)
MATRIX SWITCH
TO CSF
MSS DEMUX
TM DEMUX
PDP-11/34 COMPUTER SYSTEM
MSS SIMULATOR
TM SIMULATOR

Components

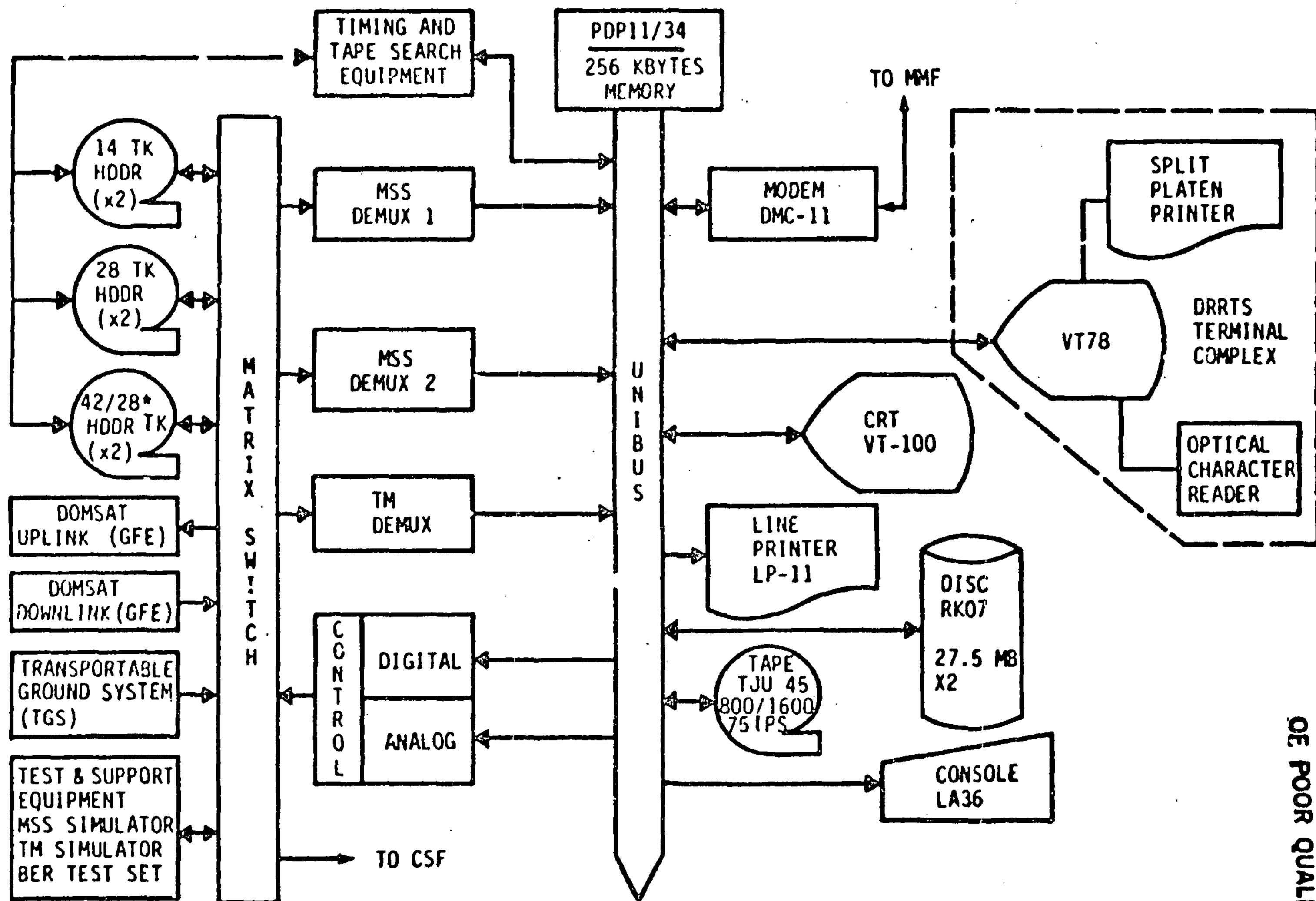


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Figure 8.1-4. DRRTS Hardware Configuration

k. Analog and digitial matrix switches

l. Line printer

m. Moving window display

n. MSS demux (LFS).

8.2 OVERVIEW/BACKGROUND

As indicated in paragraph 8.1, the scope of this section covers only the GSTDN/Foreign Ground Station and TGS data acquisition. The discussion of TM data acquisition will be covered at a later date. The requirements for the collection/processing of image data are solely the needs of the end user. These requirements are indicated to the DRRTS system operator in the form of schedules (process requests) generated by the MMF-M system of the Ground Segment. These process requests are transmitted to the DRRTS system from the MMF-M system via the Decnet interface or by CCT.

8.3 FUNCTION DESCRIPTION

The acquisition of image data is simply depicted in Figure 8.3-1. This illustration shows none of the processes but rather that all image data ends up on tape. Paragraphs 8.4.1 and 8.4.2 detail the various steps to be performed by the operator to achieve the end product. Figure 8.3-2 amplifies the data/tape in - tape out process further. Figure 8.3-3 depicts the required machination within the DRRTS system to achieve the desired output. The throughput design for the DRRTS system is to acquire 200 MSS scenes per day. Figures 8.3-4 and 8.3-5 depict the overall DRRTS system hardware and software architecture, respectively. As indicated on the upper left hand side of Figure 8.1-5 there

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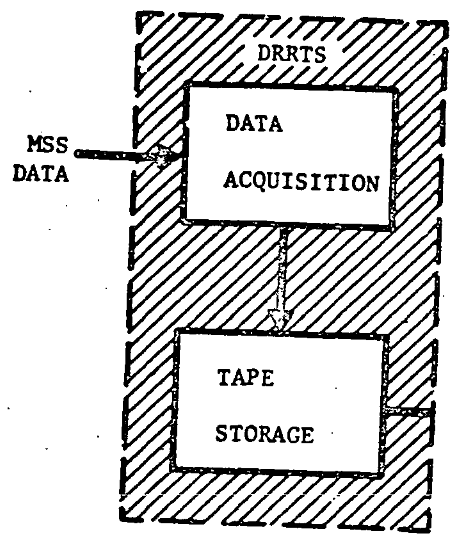

Figure 8.3-1. Image Data Acquisition

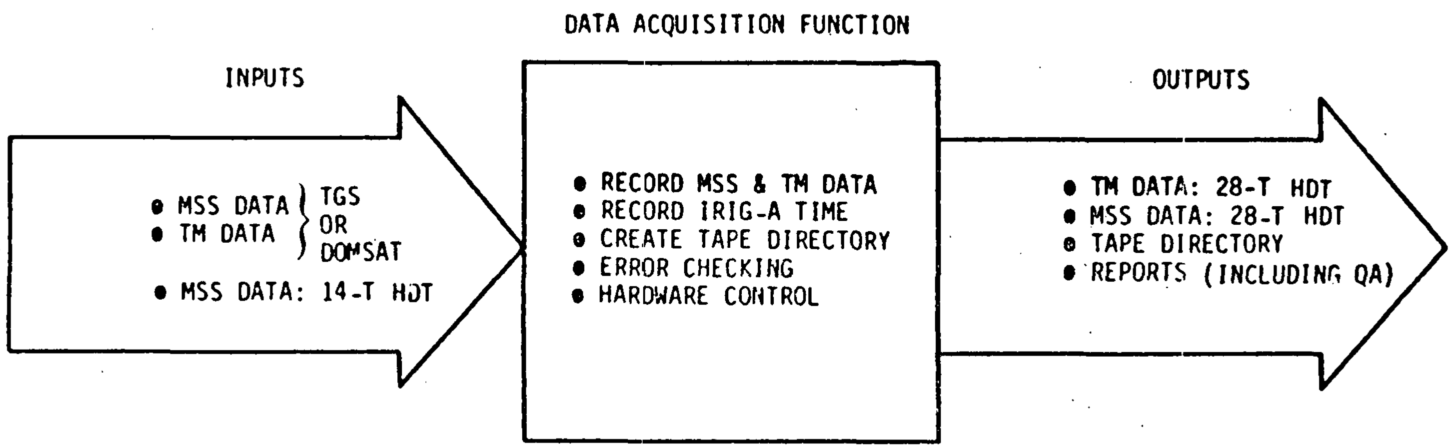

Figure 8.3-2. DRRTS Requirements

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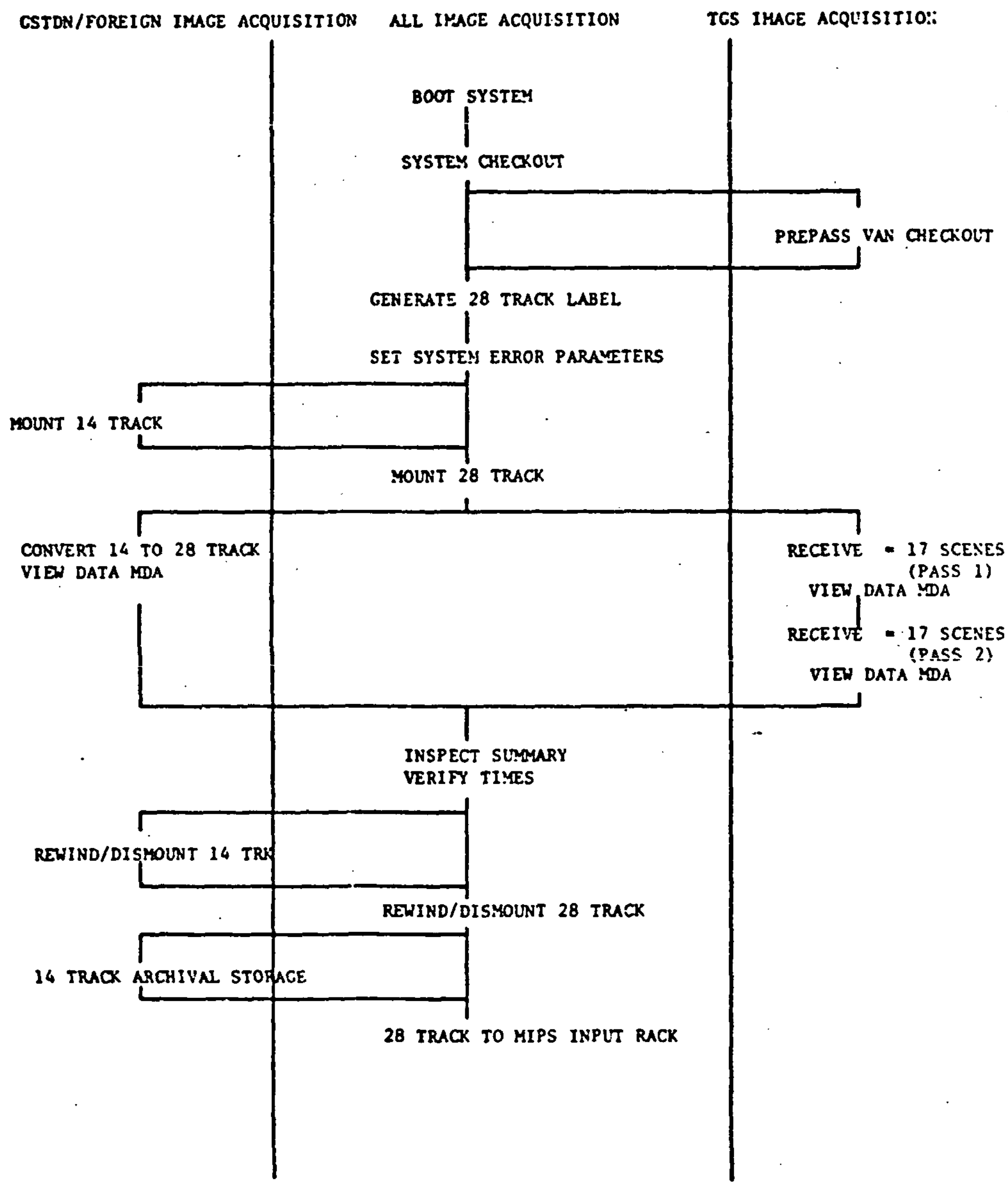

Figure 8.3-3. DRRTS Processes

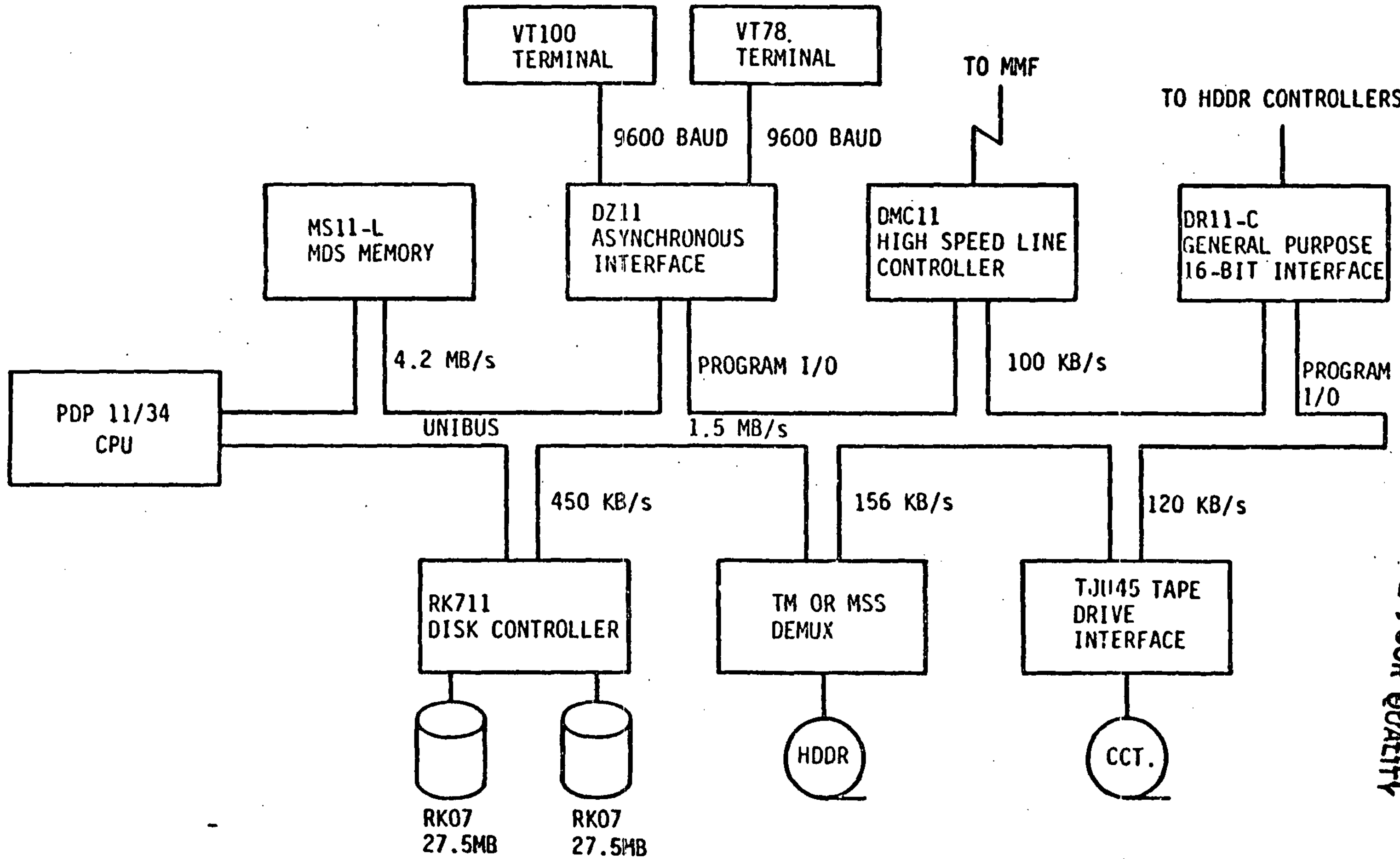

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Figure 8.3-4. DRRTS Hardware Architecture

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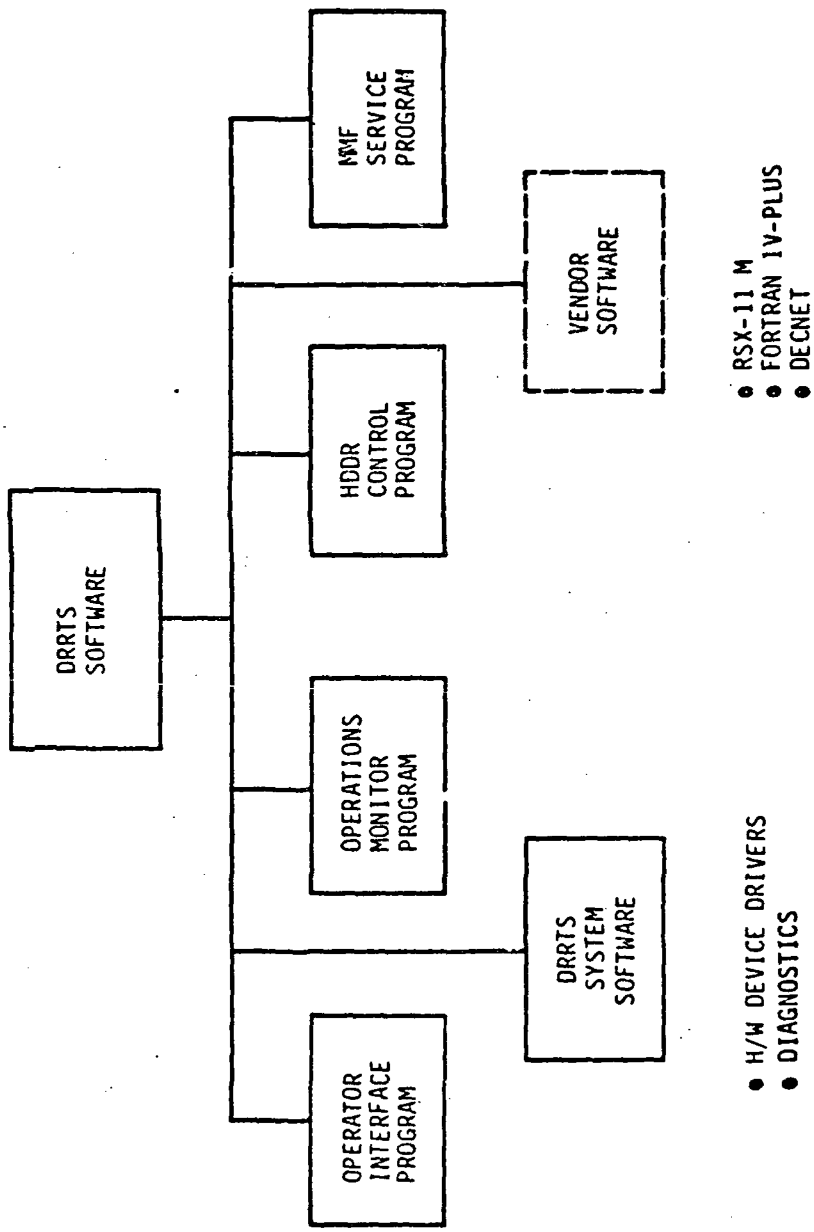

Figure 8.3-5. DRRTS Software Architecture

are two (2) 14-track HDDRs. These units are used for all GSTDN/Foreign Ground Station data to be processed by the system. The 28-track and 28/42-track HDDRs below them are used for all data output by the system. The processing of GSTDN/Foreign Ground Station data consists of the conversion of 14-track image data to 28-track image data. During this conversion process additional information is added to the output product (28-track recording) in the form of a header record at the beginning of the tape. An identical directory is written on all 28-track data tapes containing data received directly from the satellite via TGS. The purpose of the 14 to 28 track conversion is to provide uniformity of data/format for input to the remainder of the system, namely the three MIPS strings. It is not the purpose of this manual to go into an in-depth discussion on the operation of the TGS, but rather to recognize that data is received via TGS. The TGS/TGS-DRRTS interface must be operational. The line test to ensure operational readiness for this data path is covered in paragraph 8.4.1.4.1.

8.4 IMAGE DATA ACQUISITION

This section demonstrates the various functions peripheral to image data acquisition. The load, pause, continue and cancel functions are depicted and, additionally, an R-tape is generated from a G-tape input. Directory generation is performed concurrently, and end operation report and appropriate file dumps are generated at completion. Finally, scene packing is performed to create two R-tapes from one single R-tape generated in the previous operation. During the running of the above sequence the image data acquisition status will be displayed to show the change of status of the various processes.

8.4.1 OPERATOR INTRODUCTION

Operators should expect to see outputs from the system as depicted in the following examples. There are, however, some exceptions to this:

a. The RSX-11M spooler software is activated when print files are available, so the system may exhibit a delay between the event and the printout.

b. RSX-11M may print additional messages on the system console that are not shown in the following examples. For example, if the printer is offline and a new report is ready for print, RSX-11M will print a "line printer not ready" message on the system console.

c. DRRTS application software may also display additonal messages. For example, if an HDDR hardware problem is detected, an appropriate message would be displayed on the operator's terminal.

All entries in the log file are prefixed by the current date and time. Only the first line of fixed menu selection is included in the log file.

8.4.1.1 System Start-Up

ACTION	SYSTEM RESPONSE
AT THE SYSTEM CONSOLE: SIGN INTO THE DRRTS SYSTEM TYPE "HEL DRRTS/PRIV(C/R)"	AT THE SYSTEM CONSOLE: DRRTS WILL RESPOND RSX-11 BL26 MULTI-USER SYSTEM GOOD AFTERNOON 12-NOV-81 13:30 LOGGED ON TERMINAL TT0: *** WELCOME TO DRRTS ***

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```
          ACTION                                    SYSTEM RESPONSE

TYPE "@DRRTS(C/R)"                  DRRTS WILL RESPOND
                                           "ALT DRT.../PRI=107.
                                            PIP [6,306]*.DAT;*/DE
                                            PIP [6,307]*.DAT;*/DE
                                            PIP DRRTSLOG.FIL;*/DE
                                            PIP OPERATION.FIL;*/DE
                                            PIP PROCESS.FIL;*/DE
                                            PIP MODR.FIL;*/DE
                                            PIP SEQUENCES.FIL;*/DE
                                            PIP OPERATION.FIL=OPERATION.SAV
                                            PIP PROCESS.FIL=PROCESS.SAV
                                            PIP MODR.FIL=MODR.SAV
                                            PIP SEQUENCES.FIL=SEQUENCES.SAV
                                            PIP [6,306]OPR001.DAT=[6,306]OPR001.SAV
                                            PIP [6,306]OPR002.DAT=[6,306]OPR002.SAV
                                            PIP [6,307]PAD001.DAT=[6,307]PAD001.MAS
                                            PIP [6,307]IOD001.DAT=[6,307]IOD001.MAS
                                            PIP [6,307]MRD001.DAT=[6,307]MRD001.MAS
                                            PIP [6,307]PAD002.DAT=[6,307]PAD002.MAS
                                            PIP [6,307]PAD003.DAT=[6,307]PAD003.MAS
                                            REM DIRGEN
                                            REM MONCON
                                            REM OPMON1
                                            REM OPMON2
                                            REM MMFSRV
                                            REM OPRINT
                                            INS [105,5]DIRGEN/TASK=DIRGEN/PRI=220./UIC=[5,300]/CKP=YES
                                            INS [105,4]MONCON/TASK=MONCON/PRI=104./UIC=[5,300]/CKP=YES
                                            INS [105,3]OPMON1/TASK=OPMON1/PRI=103./UIC=[5,300]/CKP=YES
                                            INS [105,3]OPMON2/TASK=OPMON2/PRI=103./UIC=[5,300]/CKP=YES
                                            INS [105,2]MMFSRV/TASK=MMFSRV/PRI=102./UIC=[5,300]/CKP=YES
                                            INS [105,1]OPRINT/TASK=OPRINT/PRI=101./UIC=[5,300]/CKP=NO
                                            RUN DIRGEN
                                            RUN MONCON
                                            RUN OPMON1
                                            RUN OPMON2
                                            RUN MMFSRV
                                            RUN OPRINT"

                                    AT THE OPERATOR TERMINAL:
                                    DRRTS WILL RESPOND
                                           "DO YOU WISH TO INITIALIZE ALL DEVICES ?  (Y OR N)"
AT THE OPERATOR'S TERMINAL
TYPE "Y(C/R)"                    DRRTS WILL RESPOND
                                        "TM DEMUX #1 WARM START FAILED, COLD START REQUIRED
                                         OPERATOR INTERFACE (TMINIT) - TM DEMUX #1 RESET ERROR, DSW= -5, IOST= 0
                                         TM DEMUX #1 FAILED TO INITIALIZE
                                         TM DEMUX #2 WARM START FAILED, COLD START REQUIRED
                                         OPERATOR INTERFACE (TMINIT) - TM DEMUX #2 RESET ERROR, DSW= -5, IOST= 0
                                         TM DEMUX #2 FAILED TO INITIALIZE
                                         PLEASE HIT RETURN WHEN THE MATRIX SWITCHES ARE IN STANDBY MODE"

TYPE "(C/R)"                     DRRTS WILL RESPOND
                                        "DISCONNECT ALL MATRIX SWITCH OUTPUT PORTS ?  (Y OR N)"

TYPE "Y(C/R)"                    DRRTS WILL RESPOND
                                        "MATRIX SWITCHES INITIALIZED
                                         DEVICE INITIALIZATION COMPLETE
                                         SHOULD FILE INITIALIZATION BE PERFORMED ?  (Y OR N)"

TYPE "N(C/R)"                    DRRTS WILL RESPOND
                                        "PLEASE SELECT FUNCTION
                                            1.  DEFINE PROCESS
                                            2.  DELETE PROCESS
                                            3.  DEFINE OPERATION
                                            4.  LOAD OPERATION
                                            5.  CONTROL OPERATION
                                            6.  CANCEL OPERATION
                                            7.  DELETE OPERATION
                                            8.  RELEASE PROCESS TO MMF
                                            9.  MANUAL OPERATIONS
                                           10.  STATUS
                                           11.  ABORT DRRTS
                                           12.  END OPERATION"
```

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8.4.1.2 Input Error Detection and Recovery

The following examples depict the various key entries performed by the operator in response to system prompts. Scattered throughout this section are various entries made incorrectly to depict the error handling capabilities. The error entries are underlined. Additionally shown are various entries that cause a warning message to prevent name duplication within the system.

```
                                         PLEASE SELECT FUNCTION
                                           1.  DEFINE PROCESS
                                           2.  DELETE PROCESS
                                           3.  DEFINE OPERATION
                                           4.  LOAD OPERATION
                                           5.  CONTROL OPERATION
                                           6.  CANCEL OPERATION
                                           7.  DELETE OPERATION
                                           8.  RELEASE PROCESS TO MMF
                                           9.  MANUAL OPERATIONS
                                          10.  STATUS
                                          11.  ABORT DRRTS
                                          12.  END OPERATION"
```

```
TYPE "13(C/R)"                      DRRTS WILL RESPOND
                                          "INVALID INPUT
                                           PLEASE SELECT FUNCTION
                                             1.  DEFINE PROCESS
                                             2.  DELETE PROCESS
                                             3.  DEFINE OPERATION
                                             4.  LOAD OPERATION
                                             5.  CONTROL OPERATION
                                             6.  CANCEL OPERATION
                                             7.  DELETE OPERATION
                                             8.  RELEASE PROCESS TO MMF
                                             9.  MANUAL OPERATIONS
                                            10.  STATUS
                                            11.  ABORT DRRTS
                                            12.  END OPERATION"
```

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ACTION	SYSTEM RESPONSE
SELECT <DEFINE PROCESS> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK"
SELECT <IMAGE DATA ACQUISITION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "123456(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "ABCDEFG(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "TEST1(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "TESTA(C/R)"	DRRTS WILL RESPOND "PROCESS NAME (TESTA) ALREADY USED PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "ATEST(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER HDT TAPE LABEL ID (MNSTTTYJJJXX)"
TYPE "L3MHA8100101(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER HDT TAPE LABEL ID (MNSTTTYJJJXX)"
TYPE "L4MHA8136701(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER HDT TAPE LABEL ID (MNSTTTYJJJXX)"
TYPE "(ESC)"	DRRTS WILL RESPOND "FUNCTION 1 ABORTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE ENTER LOGICAL HDT TAPE LABEL ID (NNSTTYYJJJXX)"
TYPE "L4NNA8100102(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "367.12:00:00.0(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "366.24:00:00.0(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "366.23:59:59:9(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
DEPRESS THE "CTRL" AND THE "Z" KEYS TOGETHER	DRRTS WILL RESPOND " ^Z FUNCTION 1 ABORTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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SYSTEM RESPONSE

ACTION

DRRTS WILL RESPOND
"PLEASE SELECT OPERATION TYPE
1. HDT-R GENERATION
2. HDT COPY
3. HDT-AM UPLINK
4. PLAYBACK
5. RETROSPECTIVE DIRECTORY GENERATION
6. SCENE PACKING
7. MSS LINE TEST
8. TM LINE TEST
9. HDT COPY LINE TEST"

SELECT <HDT-R GENERATION>
TYPE "1(C/R)"

DRRTS WILL RESPOND
"NO HDT-R GENERATION OPERATION IS PAUSED
PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

SELECT <END>
TYPE "3(C/R)"

DRRTS WILL RESPOND
"NO HDT-R GENERATION OPERATION IS EXECUTING OR PAUSED
PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

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ACTION	SYSTEM RESPONSE
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "MOUNT HDT L4MHA8100104 ON THE 28-T #1 HDDR" VERIFY HDDR WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 01(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "WRONG HDDR - USE HDDR 28-T #1 VERIFY HDDR WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 01(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4MHA8100102(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "WRONG HDT - USE HDT L4MHA8100104 VERIFY HDT-ID WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4MHA8100104(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"

8.4.1.3 Manual Functions

8.4.1.3.1 Matrix Switch STCG to 14-T HDDR

```
ACTION                                  SYSTEM RESPONSE

                                   DRRTS WILL RESPOND
                                        "PLEASE SELECT FUNCTION
                                          1.  DEFINE PROCESS
                                          2.  DELETE PROCESS
                                          3.  DEFINE OPERATION
                                          4.  LOAD OPERATION
                                          5.  CONTROL OPERATION
                                          6.  CANCEL OPERATION
                                          7.  DELETE OPERATION
                                          8.  RELEASE PROCESS TO MMF
                                          9.  MANUAL OPERATIONS
                                         10.  STATUS
                                         11.  ABORT DRRTS
                                         12.  END OPERATION"

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                      DRRTS WILL RESPOND
                                        "PLEASE SELECT MANUAL OPERATION
                                          1.  HDDR
                                          2.  MATRIX SWITCH
                                          3.  READ MASTER TIME
                                          4.  READ MMF TAPE
                                          5.  WRITE MMF TAPE
                                          6.  CONFIGURE DRRTS FUNCTIONS
                                          7.  DEVICE INITIALIZATION"

SELECT <MATRIX SWITCH>
TYPE "2(C/R)"                      DRRTS WILL RESPOND
                                        "PLEASE SELECT MATRIX SWITCH TYPE
                                          1.  ANALOG
                                          2.  DIGITAL"

SELECT <ANALOG>
TYPE "1(C/R)"                      DRRTS WILL RESPOND
                                        "PLEASE SELECT MATRIX SWITCH COMMAND
                                          1.  CONNECT
                                          2.  DISCONNECT"
SELECT <CONNECT>
TYPE "1(C/R)"                      DRRTS WILL RESPOND
                                        "PLEASE SELECT INPUT PORT NUMBER
                                          1.  14-T  #1
                                          2.  14-T  #2
                                          3.  28-T  #1
                                          4.  28-T  #2
                                          5.  28-T  #3
                                          6.  28-T  #4
                                          7.    STCG  "

SELECT <STCG>
TYPE "7(C/R)"                      DRRTS WILL RESPOND
                                        "PLEASE SELECT OUTPUT PORT NUMBER
                                          1.  14-T  #1
                                          2.  14-T  #2
                                          3.  28-T  #1
                                          4.  28-T  #2
                                          5.  28-T  #3
                                          6.  28-T  #4
                                          7.  DOM-XMIT"

SELECT <28-T  #1>                  ANALOG MATRIX SWITCH WINDOW DISPLAYS WILL SHOW:  OUTPUT  7   INPUT  16
TYPE "3(C/R)"                      DRRTS WILL RESPOND
                                        "INPUT PORT   STCG   NOW CONNECTED TO OUTPUT PORT 28-T  #1
```

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8.4.1.3.2 Matrix Switch 14-T HDDR to MSS Demux to 28T HDDR

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <MATRIX SWITCH> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH TYPE 1. ANALOG 2. DIGITAL"
SELECT <DIGITAL> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH COMMAND 1. CONNECT 2. DISCONNECT"
SELECT <CONNECT> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT INPUT PORT NUMBER 1. 14-T #1 2. 14-T #2 3. MSS-SIMU 4. 28-T #1 5. 28-T #2 6. 28-T #3 7. 28-T #4 8. DOM-RECV 9. TGSRCV-M 10. TGSRCV-T 11. BER-RECV 12. TM-SIMUL"

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```
ACTION                                   SYSTEM RESPONSE

SELECT <MSS-SIML>
TYPE "3(C/R)"                       DRRTS WILL RESPOND
                                          "PLEASE SELECT OUTPUT PORT NUMBER
                                               1.  14-T  #1
                                               2.  14-T  #2
                                               3.  MSS-DMX1
                                               4.  MSS-DMX2
                                               5.  20-T  #1
                                               6.  20-T  #2
                                               7.  20-T  #3
                                               8.  20-T  #4
                                               9.  DOM-XMIT
                                              10.  TM-DEMX2
                                              11.  BER-XMIT
                                              12.  TM-DEMX1"

SELECT <20-T  #1>                   DIGITAL MATRIX SWITCH WINDOW DISPLAYS WILL SHOW:   OUTPUT  7   INPUT
TYPE "5(C/R)"                       DRRTS WILL RESPOND
                                          "INPUT PORT MSS-SIML NOW CONNECTED TO OUTPUT PORT 20-T  #1
                                           PLEASE SELECT FUNCTION
                                             1.  DEFINE PROCESS
                                             2.  DELETE PROCESS
                                             3.  DEFINE OPERATION
                                             4.  LOAD OPERATION
                                             5.  CONTROL OPERATION
                                             6.  CANCEL OPERATION
                                             7.  DELETE OPERATION
                                             8.  RELEASE PROCESS TO MMI
                                             9.  MANUAL OPERATIONS
                                            10.  STATUS
                                            11.  ABORT DRRTS
                                            12.  END OPERATION"

SELECT <STATUS>
TYPE "10(C/R)"                      DRRTS WILL RESPOND
                                          "PLEASE SELECT STATUS DISPLAY
                                             1.  HDDR STATUS
                                             2.  MATRIX SWITCH STATUS
                                             3.  IMAGE DATA ACQUISITION STATUS
                                             4.  HDT COPY STATUS
                                             5.  HDT-AM UPLINK STATUS
                                             6.  PROCESS DEFINITION TABLE
                                             7.  OPERATION DEFINITION TABLE"

SELECT <MATRIX SWITCH STATUS>
TYPE "2(C/R)"                       AT THE VT70 TERMINAL:
                                    DRRTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 8.4-

                                    AT THE OPERATOR TERMINAL:
                                    DRRTS WILL RESPOND
                                          "HOW MANY HARD COPIES DO YOU WANT ?  (0-4)"

TYPE "1(C/R)"                       THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 8.4-1
                                    WILL BE PRINTED ON THE LINE PRINTER
```

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```
                              DRHTS MATRIX SWITCH STATUS             DATE: 23-NOV-81
                                                                     TIME: 10:33:55
              DIGITAL                                              ANALOG
    INPUTS          OUTPUTS        CONNECTIONS         INPUTS          OUTPUTS        CONNECTIONS
 1. 14-T   #1   1. 14-T   #1          NC        **  1. 14-T  #1   1. 14-T   #1          NC
 2. 14-T   #2   2. 14-T   #2          NC        **  2. 14-T  #2   2. 14-T   #2          NC
 3.             3.                    NC        **  3.            3.                    NC
 4.             4. NSS-DMX1           NC        **  4.            4.                    NC
 5.             5. NSS-DMX2           NC        **  5.            5.                    NC
 6. NSS-SIML    6.                    NC        **  6.            6.                    NC
 7. 20-T   #1   7. 20-T   #1       NSS-SIML     **  7. 20-T  #1   7. 20-T   #1         STCG
 8. 20-T   #2   8. 20-T   #2          NC        **  8. 20-T  #2   8. 20-T   #2          NC
 9. 20-T   #3   9. 20-T   #3          NC        **  9. 20-T  #3   9. 20-T   #3          NC
10. 20-T   #4  10. 20-T   #4          NC        ** 10. 20-T  #4  10. 20-T   #4          NC
11.            11.                    NC        ** 11.           11.                    NC
12.            12.                    NC        ** 12.           12.                    NC
13.            13.                    NC        ** 13.           13.                    NC
14.            14.                    NC        ** 14.           14.                    NC
15. DON-RECV   15. DON-XMIT           NC        ** 15.           15. DON-XMIT           NC
16. TGSRCV-M   16.                    NC        ** 16.   STCG    16.                    NC
17. TGSRCV-T   17. TM-DEMX2           NC        ** 17.           17.                    NC
18.            18.                    NC        ** 18.           18.                    NC
19. BER-RECV   19. BER-XMIT           NC        ** 19.           19.                    NC
20. TM-SIMUL   20. TM-DEMX1           NC        ** 20.           20.                    NC
```

Figure 8.4-1. Matrix Switch Status Report After Connections

8.4.1.3.3 Matrix Switch - Disconnect Connected Device

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ACTION	SYSTEM RESPONSE
	DMRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DMRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DMRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MODR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DMRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <MATRIX SWITCH> TYPE "2(C/R)"	DMRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH TYPE 1. ANALOG 2. DIGITAL"
SELECT <ANALOG> TYPE "1(C/R)"	DMRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH COMMAND 1. CONNECT 2. DISCONNECT"
SELECT <DISCONNECT> TYPE "2(C/R)"	DMRTS WILL RESPOND "PLEASE SELECT OUTPUT PORT NUMBER 1. 20-T 01"
TYPE "1(C/R)"	ANALOG MATRIX SWITCH WINDOW DISPLAYS WILL SHOW: OUTPUT 7 INPUT 0 DMRTS WILL RESPOND "OUTPUT PORT 20-T 01 SUCCESSFULLY DISCONNECTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DMRTS 12. END OPERATION"

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ACTION	SYSTEM RESPONSE
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE VT78 TERMINAL: DRRTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 8.4-2 AT THE OPERATOR TERMINAL: DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 8.4-2 WILL BE PRINTED ON THE LINE PRINTER

8.4.1.3.4 Read Master Time

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ AM/ TAPE 5. WRITE AM TAPE 6. CONFIGURE DRRTS FUNCTION 7. DEVICE INITIALIZATION"
SELECT <READ MASTER TIME> TYPE "3(C/R)"	DRRTS WILL RESPOND "JULIAN DAY: 178 GMT: 17:51:34.8

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DRRTS MATRIX SWITCH STATUS

DATE: 23-NOV-81
TIME: 10:31:51

DIGITAL INPUTS	DIGITAL OUTPUTS	CONNECTIONS		ANALOG INPUTS	ANALOG OUTPUTS	CONNECTIONS
1. 14-T #1	1. 14-T #1	NC	**	1. 14-T #1	1. 14-T #1	NC
2. 14-T #2	2. 14-T #2	NC	**	2. 14-T #2	2. 14-T #2	NC
3.	3.	NC	**	3.	3.	NC
4.	4. MSS-DMX1	NC	**	4.	4.	NC
5.	5. MSS-DMX2	NC	**	5.	5.	NC
6. MSS-SIML	6.	NC	**	6.	6.	NC
7. 28-T #1	7. 28-T #1	NC	**	7. 28-T #1	7. 28-T #1	NC
8. 28-T #2	8. 28-T #2	NC	**	8. 28-T #2	8. 28-T #2	NC
9. 28-T #3	9. 28-T #3	NC	**	9. 28-T #3	9. 28-T #3	NC
10. 28-T #4	10. 28-T #4	NC	**	10. 28-T #4	10. 28-T #4	NC
11.	11.	NC	**	11.	11.	NC
12.	12.	NC	**	12.	12.	NC
13.	13.	NC	**	13.	13.	NC
14.	14.	NC	**	14.	14.	NC
15. DOM-RECV	15. DOM-XMIT	NC	**	15.	15. DOM-XMIT	NC
16. TGSRCV-M	16.	NC	**	16. STCG	16.	NC
17. TGSRCV-T	17. TM-DEMX2	NC	**	17.	17.	NC
18.	18.	NC	**	18.	18.	NC
19. DER-RECV	19. DER-XMIT	NC	**	19.	19.	NC
20. TM-SIMUL	20. TM-DEMX1	NC	**	20.	20.	NC

Figure 8.4-2. Matrix Switch Status Report After Disconnections

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8.4.1.3.5 System Functional Configuration

```
ACTION                                  SYSTEM RESPONSE

                                        PLEASE SELECT FUNCTION
                                          1.  DEFINE PROCESS
                                          2.  DELETE PROCESS
                                          3.  DEFINE OPERATION
                                          4.  LOAD OPERATION
                                          5.  CONTROL OPERATION
                                          6.  CANCEL OPERATION
                                          7.  DELETE OPERATION
                                          8.  RELEASE PROCESS TO MMF
                                          9.  MANUAL OPERATIONS
                                         10.  STATUS
                                         11.  ABORT DRRTS
                                         12.  END OPERATION"

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                       DRRTS WILL RESPOND
                                        "PLEASE SELECT MANUAL OPERATION
                                          1.  MODA
                                          2.  MATRIX SWITCH.
                                          3.  READ MASTER TIME
                                          4.  READ MMF TAPE
                                          5.  WRITE MMF TAPE
                                          6.  CONFIGURE DRRTS FUNCTION
                                          7.  DEVICE INITIALIZATION"

SELECT <CONFIGURE DRRTS FUNCTIONS>
TYPE "6(C/R)"                       DRRTS WILL RESPOND
                                        "PLEASE SELECT DRRTS FUNCTION
                                          1.  OPERATOR TERMINAL
                                          2.  FORMATTED DISPLAYS
                                          3.  REPORTS
                                          4.  MMF INTERFACE"

SELECT <OPERATOR TERMINAL>
TYPE "1(C/R)"                       DRRTS WILL RESPOND
                                        "PLEASE SELECT OPERATOR TERMINAL ASSIGNMENT
                                          1.  VT100
                                          2.  VT78"

SELECT <VT78>
TYPE "2(C/R)"                       AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL:
                                    DRRTS WILL RESPOND
                                        "ASSIGNMENT SUCCESSFULLY MADE"

                                    AT THE VT78 TERMINAL:
                                    DRRTS WILL RESPOND
                                        "PLEASE SELECT FUNCTION
                                          1.  DEFINE PROCESS
                                          2.  DELETE PROCESS
                                          3.  DEFINE OPERATION
                                          4.  LOAD OPERATION
                                          5.  CONTROL OPERATION
                                          6.  CANCEL OPERATION
                                          7.  DELETE OPERATION
                                          8.  RELEASE PROCESS TO MMF
                                          9.  MANUAL OPERATIONS
                                         10.  STATUS
                                         11.  ABORT DRRTS
                                         12.  END OPERATION"
```

Select ⟨Manual Operations⟩

Type "9(C/R)"

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AT THE VT78 TERMINAL:
SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT MANUAL OPERATION
1. HDDR
2. MATRIX SWITCH
3. READ MASTER TIME
4. READ MMF TAPE
5. WRITE MMF TAPE
6. CONFIGURE DRRTS FUNCTIONS
7. DEVICE INITIALIZATION"

SELECT <CONFIGURE DRRTS FUNCTIONS>
TYPE "6(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT DRRTS FUNCTION
1. OPERATOR TERMINAL
2. FORMATTED DISPLAYS
3. REPORTS
4. MMF INTERFACE"

SELECT <OPERATOR TERMINAL>
TYPE "1(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT OPERATOR TERMINAL ASSIGNMENT
1. VT100
2. VT78"

SELECT <VT100>
TYPE "1(C/R)"

AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL
DRRTS WILL RESPOND
"ASSIGNMENT SUCCESSFULLY MADE"

AT THE OPERATOR TERMINAL:
DRRTS WILL RESPOND
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

AT THE OPERATOR TERMINAL:
SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT MANUAL OPERATION
1. HDDR
2. MATRIX SWITCH
3. READ MASTER TIME
4. READ MMF TAPE
5. WRITE MMF TAPE
6. CONFIGURE DRRTS FUNCTIONS
7. DEVICE INITIALIZATION"

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```
ACTION                                        SYSTEM RESPONSE

SELECT <CONFIGURE DMRTS FUNCTIONS>
TYPE "6(C/R)"                         DMRTS WILL RESPOND
                                          "PLEASE SELECT DMRTS FUNCTION
                                            1.  OPERATOR TERMINAL
                                            2.  FORMATTED DISPLAYS
                                            3.  REPORTS
                                            4.  MMF INTERFACE"

SELECT <FORMATTED DISPLAYS>
TYPE "2(C/R)"                         DMRTS WILL RESPOND
                                          "PLEASE SELECT FORMATTED DISPLAY ASSIGNMENT
                                              1.  VT78
                                              2.  VT100"

SELECT <VT100>
TYPE "2(C/R)"                         DMRTS WILL RESPOND
                                          "ASSIGNMENT SUCCESSFULLY MADE

                                      DMRTS WILL RESPOND
                                          "PLEASE SELECT FUNCTION
                                              1.  DEFINE PROCESS
                                              2.  DELETE PROCESS
                                              3.  DEFINE OPERATION
                                              4.  LOAD OPERATION
                                              5.  CONTROL OPERATION
                                              6.  CANCEL OPERATION
                                              7.  DELETE OPERATION
                                              8.  RELEASE PROCESS TO MMF
                                              9.  MANUAL OPERATIONS
                                             10.  STATUS
                                             11.  ABORT DMRTS
                                             12.  END OPERATION"

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                         DMRTS WILL RESPOND
                                          "PLEASE SELECT MANUAL OPERATION
                                            1.  MODM
                                            2.  MATRIX SWITCH
                                            3.  READ MASTER TIME
                                            4.  READ MMF TAPE
                                            5.  WRITE MMF TAPE
                                            6.  CONFIGURE DMRTS FUNCTIONS
                                            7.  DEVICE INITIALIZATION"

SELECT <CONFIGURE DMRTS FUNCTIONS>
TYPE "6(C/R)"                         DMRTS WILL RESPOND
                                          "PLEASE SELECT DMRTS FUNCTION
                                            1.  OPERATOR TERMINAL
                                            2.  FORMATTED DISPLAYS
                                            3.  REPORTS
                                            4.  MMF INTERFACE"

SELECT <REPORTS>
TYPE "3(C/R)"                         DMRTS WILL RESPOND
                                          "PLEASE SELECT REPORTS ASSIGNMENT
                                              1.  LINE PRINTER
                                              2.  SYSTEM CONSOLE"

SELECT <SYSTEM CONSOLE>
TYPE "2(C/R)"                         DMRTS WILL RESPOND
                                          "ASSIGNMENT SUCCESSFULLY MADE
```

ACTION	SYSTEM RESPONSE
TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATION> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <CONFIGURE DRRTS FUNCTIONS> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DRRTS FUNCTION 1. OPERATOR TERMINAL 2. FORMATTED DISPLAYS 3. REPORTS 4. MMF INTERFACE"
SELECT <FORMATTED DISPLAYS> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FORMATTED DISPLAY ASSIGNMENT 1. VT78 2. VT100"
SELECT <VT78> TYPE "1(C/R)"	DRRTS WILL RESPOND "ASSIGNMENT SUCCESSFULLY MADE

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ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MODR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <CONFIGURE DRRTS FUNCTIONS> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DRRTS FUNCTION 1. OPERATOR TERMINAL 2. FORMATTED DISPLAYS 3. REPORTS 4. MMF INTERFACE"
SELECT <REPORTS> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT REPORTS ASSIGNMENT 1. LINE PRINTER 2. SYSTEM CONSOLE"
SELECT <LINE PRINTER> TYPE "1(C/R)"	DRRTS WILL RESPOND "ASSIGNMENT SUCESSFULLY MADE

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8.4.1.3.6 Status Displays

ACTION | SYSTEM RESPONSE

```
PLEASE SELECT FUNCTION
  1.  DEFINE PROCESS
  2.  DELETE PROCESS
  3.  DEFINE OPERATION
  4.  LOAD OPERATION
  5.  CONTROL OPERATION
  6.  CANCEL OPERATION
  7.  DELETE OPERATION
  8.  RELEASE PROCESS TO MHF
  9.  MANUAL OPERATIONS
 10.  STATUS
 11.  ABORT DRRTS
 12.  END OPERATION"
```

SELECT <STATUS>
TYPE "10(C/R)"

```
DRRTS WILL RESPOND
      "PLEASE SELECT STATUS DISPLAY
        1.  HDDR STATUS
        2.  MATRIX SWITCH STATUS
        3.  IMAGE DATA ACQUISITION STATUS
        4.  HDT COPY STATUS
        5.  HDT-AM UPLINK STATUS
        6.  PROCESS DEFINITION TABLE
        7.  OPERATION DEFINITION TABLE"
```

SELECT MATRIX SWITCH STATUS

TYPE "1(C/R)" — AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE HDDR STATUS REPORT SHOWN IN FIGURE 8.4-3.

TYPE "1(C/R)" — THE HDDR REPORT SHOWN IN FIGURE 8.4-3 WILL BE PRINTED ON THE LINE PRINTER

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```
                          DRRTS HDDR STATUS                     DATE: 14-MAY-82
                                                                TIME: 19:12:03

                              LAST  1 MINUTE   CURRENT TOTAL    THRESHOLDS
                                CE      UE       CE      UE       CE    UE
 HDDR    STATE  HDT LABEL ID OPNAME
14-T   #1 OFFLIN
14-T   #2 OFFLIN
28-T   #1 OFFLIN
28-T   #2 OFFLIN
28-T   #3 OFFLIN
28-T   #4 OFFLIN
```

Figure 8.4-3. HD Status Report

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DARTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DARTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DARTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 8.4-4. DARTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE MATRIX SWITCH REPORT SHOWN IN FIGURE 8.4-4. WILL BE PRINTED ON THE LINE PRINTER

DRRTS MATRIX SWITCH STATUS

DATE: 23-NOV-81
TIME: 10:33:55

DIGITAL INPUTS	DIGITAL OUTPUTS	CONNECTIONS		ANALOG INPUTS	ANALOG OUTPUTS	CONNECTIONS
1. 14-T 01	1. 14-T 01	NC	**	1. 14-T 01	1. 14-T 01	NC
2. 14-T 02	2. 14-T 02	NC	**	2. 14-T 02	2. 14-T 02	NC
3.	3.	NC	**	3.	3.	NC
4.	4. MSS-DMX1	NC	**	4.	4.	NC
5.	5. MSS-DMX2	NC	**	5.	5.	NC
6. MSS-SIML	6.	NC	**	6.	6.	NC
7. 28-T 01	7. 28-T 01	MSS-SIML	**	7. 28-T 01	7. 28-T 01	STCG
8. 28-T 02	8. 28-T 02	NC	**	8. 28-T 02	8. 28-T 02	NC
9. 28-T 03	9. 28-T 03	NC	**	9. 28-T 03	9. 28-T 03	NC
10. 28-T 04	10. 28-T 04	NC	**	10. 28-T 04	10. 28-T 04	NC
11.	11.	NC	**	11.	11.	NC
12.	12.	NC	**	12.	12.	NC
13.	13.	NC	**	13.	13.	NC
14.	14.	NC	**	14.	14.	NC
15. DOR-RECV	15. DOR-XMIT	NC	**	15.	15. DOR-XMIT	NC
16. TGSRCV-R	16.	NC	**	16. STCG	16.	NC
17. TGSRCV-T	17. TM-DEMX2	NC	**	17.	17.	NC
18.	18.	NC	**	18.	18.	NC
19. BER-RECV	19. BER-XMIT	NC	**	19.	19.	NC
20. TM-SIMUL	20. TM-DEMX1	NC	**	20.	20.	NC

Figure 8.4-4. Matrix Switch Status Report

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO AKF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. MODE STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 8.4-5. DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION REPORT SHOWN IN FIGURE 8.4-5 WILL BE PRINTED ON THE LINE PRINTER

IMAGE DATA ACQUISITION STATUS REPORT

DATE: 21-JAN-82
TIME: 03:34:19

PROCESS REQUEST	H-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR		COMPLETION DATE	COMPLETION TIME
1. TGSACW	READY	READY	NOT DEF	L4MHRU202102	28-T	01		
2. [illegible]	READY	READY	NOT DEF	L4MHHU202103	20-T	02		
3. [illegible]	READY	READY	NOT DEF	L4MHHU202104	20-T	01		
4. [illegible]	READY	READY	NOT DEF	L4MHHU202105	24-T	01		

TOTAL NUMBER OF PROCESS REQUESTS: 4

Figure 8.4-5. Image Data Acquisition Status Report

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ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MRF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. MDOR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. MDT COPY STATUS 5. MDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE PROCESS DEFINITION TABLE REPORT SHOWN IN FIGURE 8.4-6. DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE PROCESS DEFINITION TABLE REPORT SHOWN IN FIGURE 8.4-6 WILL BE PRINTED ON THE LINE PRINTER

```
                         HDT COPY PROCESS TABLE            DATE: 21-JAN-82
                                                           TIME: 02:15:01
PROCESS NAME: DPR001                        PROCESS REQUEST DATE: 21-JAN-82
MASTER HDT-ID: L4HHA8130303                 PROCESS REQUEST TIME: 01:24:35
PROCESS REQUEST ID: DRT820150001
                         # COPIES: 1  # LOGICAL TAPES: 1  # COPY TRACKS: 28

LOGICAL TAPE COPIES

SEQUENCE #     COPY HDT-ID        START TIME          STOP TIME

    1          L4HHA8201501       303.15:31:00.0      303.15:35:00.0

END OF REPORT
```

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Figure 8.4-6. Process Definition Table Report

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ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE OPERATION DEFINITION TABLE STATUS REPORT SHOWN IN FIGURE 8.4-7. DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE OPERATION DEFINITION STATUS REPORT SHOWN IN FIGURE 8.4-7 WILL BE PRINTED ON THE LINE PRINTER

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```
                         OPERATION DEFINITION REPORT            DATE: 22-JAN-82
                                                                TIME: 17:23:35
OPERATION NAME: GSCOPY
OPERATION TYPE: HDT COPY
PROCESS NAME: DPR001
DATA SOURCE: HDT
                              INPUT               OUTPUT

MATRIX SWITCH:               20-T  01            20-T  02
CORRECTED THRESHOLD:          1000                1000
UNCORRECTED THRESHOLD:          10                  10
HDT-ID:                    L4MHA8130303        L4MHA8201501

             DATA RATES
RECORDED:     AM RATE                  INSTRUMENT TYPE: MSS
PLAYBACK:     1 X MSS                  DEMUX:           N/A
RECORDING:    1 X MSS                  DIRECTORY:       NO
```

Figure 8.4-7. Operation Definition Table Status Report

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8.4.1.3.7 Device Initialization

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MODE 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ RMF TAPE 5. WRITE RMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <DEVICE INITIALIZATION> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DEVICE(S) TO INITIALIZE 1. MATRIX SWITCHES 2. TM DEMUX #1 3. TM DEMUX #2 4. ALL OF THE ABOVE"
SELECT <MATRIX SWITCHES> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE HIT RETURN WHEN MATRIX SWITCHES ARE IN STANDBY MODE"
PUT MATRIX SWITCHES IN STANDBY TYPE "(C/R)"	DRRTS WILL RESPOND "DISCONNECT ALL OUTPUT PORTS ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL RESPOND "MATRIX SWITCHES INITIALIZED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MODE 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ RMF TAPE 5. WRITE RMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"

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```
SELECT <DEVICE INITIALIZATION>
TYPE "7(C/R)"                         DMRTS WILL RESPOND
                                            "PLEASE SELECT DEVICE(S) TO INITIALIZE
                                                1.  MATRIX SWITCHES
                                                2.  TM DEMUX #1
                                                3.  TM DEMUX #2
                                                4.  ALL OF THE ABOVE"

SELECT <ALL OF THE ABOVE>
TYPE "4(C/R)"                         DMRTS WILL RESPOND
                                            "PLEASE HIT RETURN WHEN MATRIX SWITCHES ARE IN STANDBY MODE"

TYPE "(C/R)"                          DMRTS WILL RESPOND
                                            "DISCONNECT ALL MATRIX SWITCH OUTPUT PORTS ?  (Y OR N)"

TYPE "Y(C/R)"                         DMRTS WILL RESPOND
                                            "MATRIX SWITCHES INITIALIZED
                                             TM DEMUX #1 WARM START FAILED, COLD START REQUIRED
                                             OPERATOR INTERFACE (NTMINI) - TM DEMUX 01 RESET ERROR, DSW=  -5,  IOSTO 0
                                             TM DEMUX #1 FAILED TO INITIALIZE
                                             TM DEMUX #2 WARM START FAILED, COLD START REQUIRED
                                             OPERATOR INTERFACE (NTMINI) - TM DEMUX 02 RESET ERROR, DSW=  -5,  IOSTO 0
                                             TM DEMUX #2 FAILED TO INITIALIZE
                                             PLEASE SELECT FUNCTION
                                               1.  DEFINE PROCESS
                                               2.  DELETE PROCESS
                                               3.  DEFINE OPERATION
                                               4.  LOAD OPERATION
                                               5.  CONTROL OPERATION
                                               6.  CANCEL OPERATION
                                               7.  DELETE OPERATION
                                               8.  RELEASE PROCESS TO MMF
                                               9.  MANUAL OPERATIONS
                                              10.  STATUS
                                              11.  ABORT DMRTS
                                              12.  END OPERATION"
```

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8.4.1.4 Line Test Operations

The following paragraphs depict how the operator may test the system for operational readiness.

8.4.1.4.1 MSS Line Test

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-W GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <MSS LINE TEST> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTML"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL DRRTS WILL RESPOND "MOUNT HDT L4RMR8100110 ON THE 28-T 01 HDDR" "VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4RMR8100110(C/R)"	ON THE OPERATOR'S TERMINAL DRRTS WIL RESPOND "PLEASE SELECT OUTPUT FILE DISPOSITION 1. CREATE NEW MASTER FILES 2. COMPARE WITH PREVIOUSLY CREATED MASTER FILES

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ACTION	SYSTEM RESPONSE
ON THE OPERATOR'S TERMINAL SELECT <COMPARE> TYPE "2(C/R)"	DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED" "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTML, STARTED" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTML, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <MSS LINE TEST> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTML"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4MHR8100110 FROM THE 28-T #1 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "28-T #1(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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USE THE OCR WAND TO READ THE
HDDR ID FROM THE HDDR OR
TYPE "L4MR8100110(C/R)"

ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND
"MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED
DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"

ON THE OPERATOR'S TERMINAL,
TYPE "Y(C/R)"

DRRTS WILL PRINT THE FOLLOWING REPORTS:
MSS LINE TEST REPORT (FIGURE 8.4-8)
IMAGE QUALITY DATA FILE DUMP
(FIGURE 8.4-9)
DIRECTORY FILE DUMP (FIGURE 8.4-10)
HDT QUALITY FILE DUMP (FIGURE 8.4-11)
DRRTS WILL RESPOND
"ARE THE RESULTS ACCEPTABLE ?
(Y OR N)"

```
                         MSS LINE TEST REPORT                  DATE: 23-NOV-81
                                                               TIME: 12:30:56
                                                    COMPLETION DATE: 23-NOV-81
                                                    COMPLETION TIME: 12:30:10

MODE OF RECEIPT: SIMULATOR MISSION: LS-4  INSTRUMENT: MSS
MDT-R ID: L4MMRA100110      MDDR: 20-T  #1 UE:     14       CE:  1040

INTERVAL                MASTER                                TEST
                  IRIG          SPACECRAFT            IRIG           SPACECRAFT

  1  START  327.19:57:13.9  226.06:34:51.0  327.17:25:49.3  264.14:59:00.4
     STOP   327.16:06:21.4  226.06:43:59.6  327.17:26:56.4  264.14:59:40.8

INTERVALS DO NOT MATCH BEYOND THIS POINT

TOTAL DIFFERENCES:    4
```

Figure 8.4-8. MSS Line Test Report

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IMAGE QUALITY DATA

DATE: 23-NOV-81
TIME: 12:31:02

INPUT HDT:
OUTPUT HDT: L4MMR8100110

INTERVAL	SPACECRAFT TIME	SUBSTITUTED FOR SPACECRAFT TIME	MAJOR FRAME SYNC LOSS	MINOR FRAME SYNC FAULT	MINOR FRAME SYNC LOSS
1	81264145900410	N	N	Y	Y
	81264145900500	N	N	Y	Y
	81264145900770	N	N	Y	Y
	81264145900860	N	N	Y	Y

Figure 8.4-9. Image Quality Data for MSS Line Test

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```
                        DIRECTORY FILE                 DATE: 23-NOV-81
                                                       TIME: 12:31:03

NDT: L6MHR8100110  HDDR: H-3  DATA RATE: 15063  DATA SOURCE: SIM

ASSOCIATED FILE NAMES:
     PAD001
     IOD001

INTERVAL          SPACECRAFT                         IRIG TIME
           START TIME     STOP TIME       START TIME     STOP TIME

   1.    81264145900410 81264145948830   3271725493     3271726564

NO. OF INTERVALS:  1
```

Figure 8.4-10. Directory File Dump for MSS Line Test

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:31:03

HDT: L4HHR8100110 MODE: N-3 DATA RATE: 15063 DATA SOURCE: SIM PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271725501	0	0
3271725557	462	14
3271726013	0	0
3271726068	1	0
3271726122	2	0
3271726177	3	0
3271726232	0	0
3271726287	2	0
2930313524	1365	0
3271726401	0	0
3271726456	5	0

Figure 8.4-11. HDT Quality Data for MSS Line Test

8.4.1.4.2 MMF Services Functions

The functions of DRRTS - namely image data acquisition and uplink copy, are controlled by process requests received from MMF. The reciprocal of this sequence is the informing of MMF by DRRTS of processes complete or the release of a process to MMF. The following scenarios will show the operator the various prompts and responses of communication by DRRTS to MMF.

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <RELEASE PROCESS> TYPE "8(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK
SELECT <IMAGE DATA ACQUISITION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTA L4NN8100101"
TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE PROCESS HAS BEEN RELEASED, DRRTS WILL RESPOND "MMF SERVICE - PROCESS TESTA RELEASED TO MMF"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. MODE STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION REPORT SHOWN IN FIGURE 8.4-12 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

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IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 12:36:45

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	NOT-R LABEL	NDDR	COMPLETION DATE	COMPLETION TIME
1. TESTB	NOT DEF	NOT DEF	NOT DEF	L4MHR8100102			
2. TESTC	NOT DEF	NOT DEF	NOT DEF	L4MHR8100103			
3. TESTD	NOT DEF	NOT DEF	NOT DEF	L4MHR8100104			
4. TESTE	NOT DEF	NOT DEF	NOT DEF	L4MHR8100105			
5. TESTF	NOT DEF	NOT DEF	NOT DEF	L4MHR8100106			
6. TESTG	NOT DEF	NOT DEF	NOT DEF	L4MHR8100107			
7. TESTH	NOT DEF	NOT DEF	NOT DEF	L4MHR8100108			
8. TESTI	NOT DEF	NOT DEF	NOT DEF	L4MHR8100109			
9. ATEST	NOT DEF	NOT DEF	NOT DEF	L4MHA0136601			

TOTAL NUMBER OF PROCESS REQUESTS: 9

Figure 8.4-12. Image Data Acquisition Status Report After Process Has Been Released

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TYPE "1(C/R)"

THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER
THEN, DRRTS WILL RESPOND
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

SELECT <RELEASE PROCESS>
TYPE "8(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT PROCESS TYPE
1. IMAGE DATA ACQUISITION
2. HDT COPY
3. HDT-AM UPLINK

SELECT <HDT COPY>
TYPE "2(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT PROCESS
1. TESTCP L4MHA8100101"

TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED

DRRTS WILL RESPOND
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

WHEN THE PROCESS HAS BEEN RELEASED TO MMF, DRRTS WILL RESPOND
"MMF SERVICE - PROCESS TESTCP RELEASED TO MMF"

SELECT <STATUS>
TYPE "10(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT STATUS DISPLAY
1. HDDR STATUS
2. MATRIX SWITCH STATUS
3. IMAGE DATA ACQUISITION STATUS
4. HDT COPY STATUS
5. HDT-AM UPLINK STATUS
6. PROCESS DEFINITION TABLE
7. OPERATION DEFINITION TABLE"

SELECT HDT COPY STATUS
TYPE "4(C/R)"

THE HDT COPY PRODUCTION STATUS REPORT SHOWN IN FIGURE 8.4-13 WILL BE DISPLAYED ON THE VT-78. THEN DRRTS WILL RESPOND
"HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

```
                    HDT COPY PRODUCTION STATUS            DATE: 23-NOV-81
                                                          TIME: 12:37:40

PROCESS                 MASTER      MASTER     COPY     LOG  TAPES    COMPLETION
REQUEST  STATUS    HDT LABEL ID     HDDR       HDDR     TO DO/CUMP   DATE      TIME

TOTAL NUMBER OF PROCESS REQUESTS:  0
```

Figure 8.4-13. HDT Copy Production Status After Process Has Been Released

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ACTION	SYSTEM RESPONSE
TYPE "11(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HNF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <RELEASE PROCESS> TYPE "8(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTUP L4MMA8180104"
TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HNF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE PROCESS HAS BEEN RELEASED TO HNF, DRRTS WILL RESPOND "HNF SERVICE - PROCESS TESTUP RELEASED TO HNF"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HOOK STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT HDT-AM UPLINK STATUS TYPE "5(C/R)"	THE HDT UPLINK PRODUCTION STATUS REPORT SHOWN IN FIGURE 8.4-14 WILL BE DISPLAYED ON THE VT-78. THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

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```
                  HDT-AM UPLINK PRODUCTION STATUS         DATE: 23-NOV-81
                                                          TIME: 12:39:09

PROCESS                                      LOGICAL  TAPES      COMPLETION
REQUEST   STATUS    HDT LABEL ID    HDDR     TO DO/COMPLETE    DATE      TIME

TOTAL NUMBER OF PROCESS REQUESTS:  0
```

Figure 8.4-14. HDT-AM Uplink Production Status After Process Has Been Released

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```
ACTION                                  SYSTEM RESPONSE

           TYPE "1(C/R)"                      DRRTS WILL RESPOND
                                                   "PLEASE SELECT FUNCTION
                                                        1.  DEFINE PROCESS
                                                        2.  DELETE PROCESS
                                                        3.  DEFINE OPERATION
                                                        4.  LOAD OPERATION
                                                        5.  CONTROL OPERATION
                                                        6.  CANCEL OPERATION
                                                        7.  DELETE OPERATION
                                                        8.  RELEASE PROCESS TO MRF
                                                        9.  MANUAL OPERATIONS
                                                       10.  STATUS
                                                       11.  ABORT DRRTS
                                                       12.  END OPERATION"

           SELECT <MANUAL OPERATIONS>
           TYPE "9(C/R)"                      DRRTS WILL RESPOND
                                                   "PLEASE SELECT MANUAL OPERATION
                                                        1.  HOUR
                                                        2.  MATRIX SWITCH
                                                        3.  READ MASTER TIME
                                                        4.  READ MRF TAPE
                                                        5.  WRITE MRF TAPE
                                                        6.  CONFIGURE DRRTS FUNCTIONS
                                                        7.  DEVICE INITIALIZATION"

SELECT <WRITE MRF TAPE>
TYPE "5(C/R)"                    DRRTS WILL RESPOND
                                     "AT THE SYSTEM CONSOLE, TYPE "@WRITETAPE (C/R)" AND ANSWER ALL QUESTION
                                      THEN RETURN TO THE OPERATOR TERMINAL AND HIT THE RETURN KEY"

MOUNT A SCRATCH TAPE ON          ON THE SYSTEM CONSOLE, DRRTS WILL RESPOND
THE PDP 11/34 TAPE DRIVE             ">DMO MM0:
ON THE SYSTEM CONSOLE                 DMO -- VOLUME NOT MOUNTED BY TI:
TYPE "@WRITETAPE(C/R)"                >DEA MM0:
                                      >;
                                      >;  MOUNT A BLANK TAPE WITH ITS WRITE PROTECT RING, AND THEN HIT RETUR
                                      >;
                                      >* [S]:"

TYPE "(C/R)"                     DRRTS WILL RESPOND
                                     ">* PLEASE INPUT TAPE LABEL [S]:"

TYPE "DECNET(C/R)"               DRRTS WILL RESPOND
                                     ">ALL MM0:
                                      >INI MM0:DECNET/DENS=1600
                                      >MOU MM0:DECNET/DENS=1600/VI
                                      MOUNT ** VOLUME INFORMATION **
                                      CLASS      = FILES 11
                                      DEVICE     = MM0:
                                      LABEL      = DECNET
                                      UIC        = [5,300]
                                      FILE PRO   = [RWED,RWED,RWED,RWED]
                                      ACP NAME   = MTAACP
                                      >;
                                      >;  NOW RETURN TO THE OPERATOR TERMINAL
                                      >;
                                      >@ EOF"

ON THE OPERATOR'S TERMINAL.
TYPE "(C/R)" AND WAIT FOR        ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND
THE TAPE TO BE WRITTEN               "PLEASE SELECT FUNCTION
                                         1.  DEFINE PROCESS
                                         2.  DELETE PROCESS
                                         3.  DEFINE OPERATION
                                         4.  LOAD OPERATION
                                         5.  CONTROL OPERATION
                                         6.  CANCEL OPERATION
                                         7.  DELETE OPERATION
                                         8.  RELEASE PROCESS TO MRF
                                         9.  MANUAL OPERATIONS
                                        10.  STATUS
                                        11.  ABORT DRRTS
                                        12.  END OPERATION"
```

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ACTION	SYSTEM RESPONSE
	WHEN THE MMF TAPE IS WRITTEN, DARTS WILL RESPOND "CCI TAPE WRITE COMPLETE, TYPE "@DISMOUNT" ON THE SYSTEM CONSOLE"
ON THE SYSTEM CONSOLE, TYPE "@DISMOUNT(C/R)" DISMOUNT THE TAPE FROM THE PDP 11/34 TAPE DRIVE	ON THE SYSTEM CONSOLE, DARTS WILL RESPOND ">DMO MM0: DMO -- TT0: DISMOUNTED FROM MM0: *** FINAL DISMOUNT *** >DEA MM0: >; >; TAPE IS NOW DISMOUNTED >; >; PLEASE REMOVE TAPE FROM TAPE DRIVE, AND RETURN TO THE OPERATO[R] >; >@ <EOF>"
SELECT <MANUAL OPERATIONS> ON THE OPERATOR'S TERMINAL, TYPE "9(C/R)"	ON THE OPERATOR'S TERMINAL, DARTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MODE 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DARTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <READ MMF TAPE> TYPE "4(C/R)"	DARTS WILL RESPOND "AT THE SYSTEM CONSOLE, TYPE "@READTAPE (C/R)" AND ANSWER ALL QUEST[IONS] THEN RETURN TO THE OPERATOR TERMINAL AND HIT THE RETURN KEY"
MOUNT THE MMF TAPE ON THE PDP 11/34 TAPE DRIVE ON THE SYSTEM CONSOLE TYPE "@READTAPE(C/R)"	ON THE SYSTEM CONSOLE DARTS WILL RESPOND ">DMO MM0: DMO -- VOLUME NOT MOUNTED BY TI: >DEA MM0: >; >; MOUNT MMF TAPE WITHOUT TH WRITE PROTECT RING AND THEN HIT RETU[RN] >; >@ [S]:
TYPE "(C/R)"	DARTS WILL RESPOND ">* DO YOU WISH TO OVERRIDE THE TAPE LABEL? [Y/N]:"
TYPE "N(C/R)"	DARTS WILL RESPOND ">* PLEASE INPUT TAPE LABEL [S]:"

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ACTION	SYSTEM RESPONSE
TYPE "DECNET(C/R)"	DRRTS WILL RESPOND ">ALL MM0: >MOU MM0:DECNET/DENS=1600/VI MOUNT ** VOLUME INFORMATION ** CLASS = FILES 11 DEVICE = MM0: LABEL = DECNET UIC = [5,300] FILE PRO = [RWED,RWED,RWED,RWED] ACP NAME = MTAACP >; >; NOW RETURN TO THE OPERATOR TERMINAL >; >;@ <EOF>"
ON THE OPERATOR'S TERMINAL, TYPE "(C/R)" AND WAIT FOR CLOSED LOOP PROCESSING TO COMPLETE	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE MMF TAPE IS READ, DRRTS WILL RESPOND "CCT TAPE READ COMPLETE, TYPE "@DISMOUNT" ON THE SYSTEM CONSOLE OPR002 WAS ADDED TO THE PROCESS FILE OPR003 WAS ADDED TO THE PROCESS FILE OPR004 WAS ADDED TO THE PROCESS FILE OPR005 WAS ADDED TO THE PROCESS FILE CLOSED LOOP PROCESSING SUCESSFUL"
ON THE SYSTEM CONSOLE, TYPE "@DISMOUNT(C/R)" DISMOUNT THE TAPE FROM THE PDP 11/34 TAPE DRIVE	ON THE SYSTEM CONSOLE, DRRTS WILL RESPOND ">DMO MM0: DMO -- TT0: DISMOUNTED FROM MM0: *** FINAL DISMOUNT *** >DEA MM0: >; >; TAPE IS NOW DISMOUNTED >; >; PLEASE REMOVE TAPE FROM TAPE DRIVE, AND RETURN TO OPERATOR TERMI >; >@ <EOF>"

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8.4.1.4.3 Image Data Acquisition Reports

ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. CDDM STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 8.4-15 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

IMAGE DATA ACQUISITION STATUS REPORT

DATE: 21-JAN-82
TIME: 01:34:19

PROCESS REQUEST	H-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	MODE		COMPLETION DATE	COMPLETION TIME
1. TCRACH	READY	READY	NOT DEF	L4HHB202102	20-T	01		
2. UNCVRA	READY	READY	NOT DEF	L4HHB202103	20-T	02		
3. UNCVRA	READY	READY	NOT DEF	L4HHB202104	20-T	01		
4. C[illegible]	READY	READY	NOT DEF	L4HHB202105	20-T	01		

TOTAL NUMBER OF PROCESS REQUESTS: 4

Figure 8.4-15. Image Data Acquisition Status Report

8.4.1.5 Data Acquisition

8.4.1.5.1 GSTDN/Foreign Ground Station Acquisition

The acquisition of all data received from the satellite by stations within the GSTDN network, as well as by various foreign ground stations, is obtained by the Landsat-D Ground Segment via 14-track HDDR tapes. In the case of the GSTDN network the data is received at one GSTDN site, recorded on 14-track HDDRs and then transmitted (see Figure 8.4-16) to the Domsat satellite, which in turn retransmits the image data to a receiving antenna at Buildling 23, GSFC. The data as received at Building 23 is then recorded on 14-track HDDRs. These 14-track HDDR tapes are sent by courier to Building 28 GSFC for conversion to 28-track HDTs by the DRRTS system. These 28-track HDTs are now sent to the Ground Segment MIPS strings for processing. Operator interface to the system and control of the various image acquisition functions are via the VT100 and VT78 KCRTS. Not covered here, but necessary to maintain the low error rate, are the cleaning and precision rewinding of all 28-track HDDR tapes. All image data acquisition operations are driven by the MMF-M generated process request (see Figure 8.4-17). The operator has the option of a hardcopy printout of the process request or merely a viewing of the same on the VT100 KCRT. Additionally, the operator has at his disposal the capability of generating either hardcopy or KCRT display of various reports on the condition and status of the system, as well as the current operations. Figures 8.4-18 through 8.4-36 illustrate these reports.

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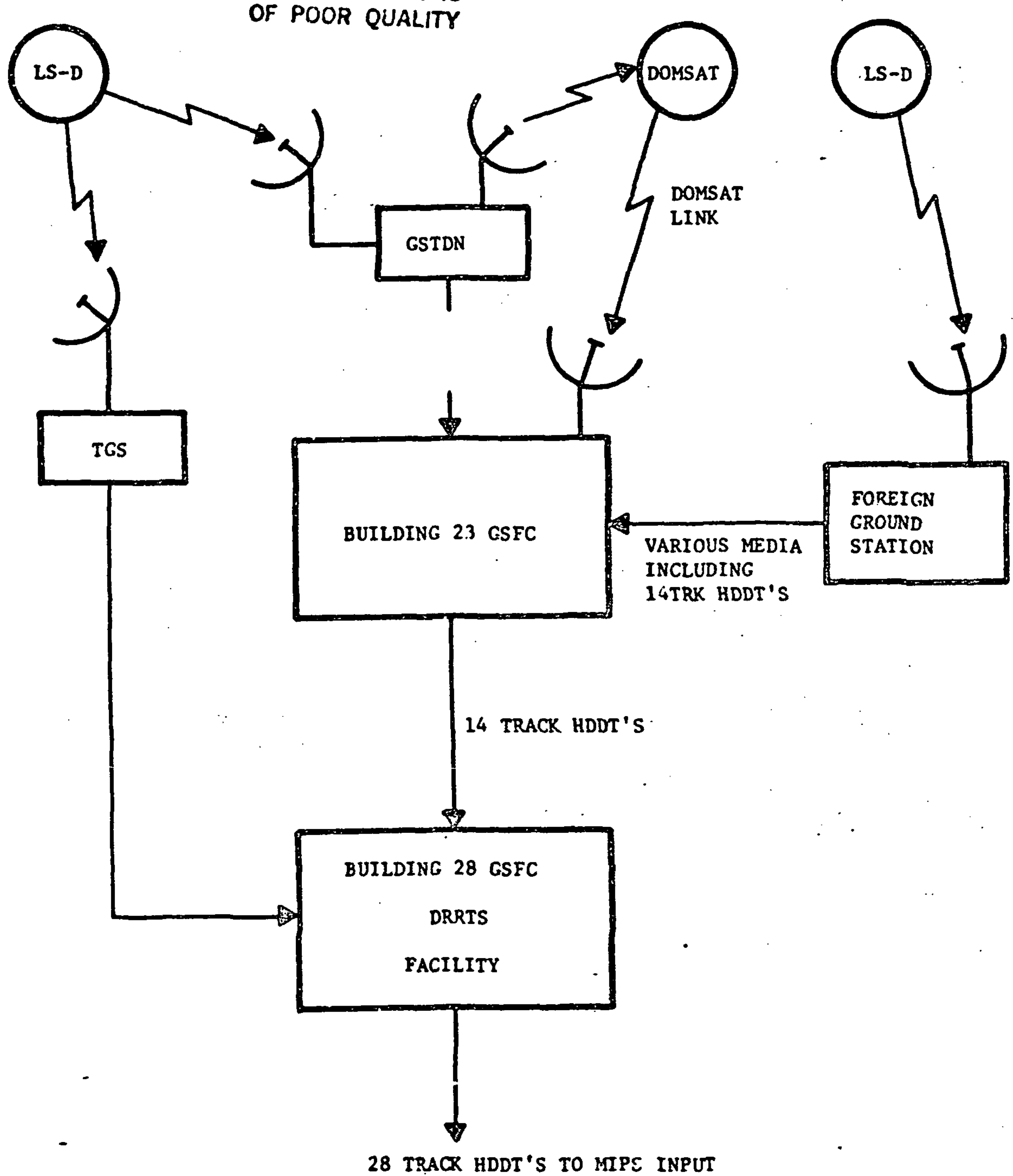

Figure 8.4-16. Image Data Acquisition

```
                        HDT COPY PROCESS TABLE                DATE: 21-JAN-82
                                                              TIME: 02:15:01
PROCESS NAME: DPR001                             PROCESS REQUEST DATE: 21-JAN-82
MASTER HDT-ID: L4MHA8130303                      PROCESS REQUEST TIME: 01:24:35
PROCESS REQUEST ID: DRT020150001
                        # COPIES:  1   # LOGICAL TAPES: 1   # COPY TRACKS: 28

LOGICAL TAPE COPIES

SEQUENCE #      COPY HDT-ID          START TIME            STOP TIME

    1           L4MHA8201501       303.15:31:00.0        303.15:35:00.0

END OF REPORT
```

Figure 8.4-17. MMF-M Generated Process Request

The following operator prompt and response sequences describe the actions required of the operator in the operation of the DRRTS system for processing image data from GSTDN/foreign ground station tapes.

After booting the operating system, the operator logs on as follows: (ƀ represents a space)

>HELƀDRRTS/XXX

where XXX are the operator's initials. DRRTS execution is started by entering the following:

>@DRRTS

This causes the execution of command file DRRTS.CMD, which loads and starts the execution of the four DRRTS tasks. The operator interface task loads the run time parameters from the file RUNTIM.PRM, performs other initialization activities, then displays the following message:

DRRTS INITIALIZATION COMPLETE

After this message is printed, the following function menu is displayed:

SELECT FUNCTION

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERATION
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION

7. DELETE DATA ACQUISITION PROCESS

8. MANUAL OPERATIONS

9. STATUS

>

The > at the bottom indicates where the operator response is echoed on the screen. The operator enters the item number of the function he wishes to select, then hits RETURN. If he enters an invalid input, the message INVALID INPUT - TRY AGAIN is displayed, then the menu is displayed again. This is true for all DRRTS prompts. If he enters a valid input, a prompt/response sequence is initiated for the function chosen. If the operator responds to any prompt by hitting the ESCAPE then the RETURN keys, the function menu is regenerated and the current key-in sequence is aborted.

For the purposes of this discussion only the prompt/response path for 14-track HDDR input/28-track output will be followed.

After the operator selects DEFINE OPERATION (1), the following menu is displayed:

1. HDT-R GENERATION

2. HDT COPY

3. HDT-AM UPLINK

4. RETROSPECTIVE DIRECTORY GENERATION

5. SCENE PACKING

6. LINE TEST

>

After selecting HDT-R GENERATION (1) the following prompt is displayed.

ENTER OPERATION NAME (1-6 ALPHABETIC CHARACTERS)

If a non-alphabetic or a name in excess of 6 characters is entered, the "invalid input" error message is displayed and the operator is reprompted for the operation name. The operation name is an arbitrary group of characters used within the system to distinguish between operations when multiple operations are on-going.

After the operator enters the operation name, the following menu is displayed:

SELECT INSTRUMENT TYPE

1. MSS
2. TM

>

For the purpose of discussion the entry made is (1), or MSS. Following this entry the following menu is displayed:

SELECT DATA SOURCE

1. TGS
2. DOMSAT
3. HDT-GM

>

Since the input source is 14-track tape the third or HDT-GM selection is made. Following this entry the following menu is displayed:

SELECT DATA RATE

1. REAL-TIME
2. 2 x REAL-TIME
3. 3 x REAL-TIME

The data rate for all 14-track input tapes is always 1 or real-time. After the selection of REAL-TIME (1) the following menu is displayed:

SELECT PLAYBACK (SOURCE) HDDR

1. 14-T #1
2. 14-T #2

>

The playback or source HDDR selection is up to the operator for the most part and is predicated by the operational status of the unit, which unit was just cleaned, etc. Following the selection of the source or input HDDR, the following menu is displayed:

SELECT RECORDING (DESTINATION) HDDR

1. 28-T #1
2. 28-T #2
3. 28-T #3
4. 28-T #4

>

The selection criteria for the output or destination HDDR are the same as for the input HDDR select. Following the recording HDDR selection, the following prompt is displayed.

DO YOU WANT A DIRECTORY: (Y OR N)

>

For the purposes of this discussion the response to the above prompt will be Y (yes). Figure 8.4-21 depicts a typical directory.

Following the directory generation prompt/response, the message below is displayed:

OPERATION XXXXXX DEFINITION COMPLETION

Once the operator has defined the operation to be performed and the above message is displayed, the system will once again display the original (first) menu on the KCRT screen.

SELECT OPERATION TYPE

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERATION
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION
7. DELETE DATA ACQUISITION PROCESS
8. MANUAL OPERATIONS
9. STATUS

>

To proceed with the acquisition of image data, the next selection made by the operator will be item 2 - LOAD OPERATION.

After LOAD OPERATION is selected, the following menu is displayed:

SELECT OPERATION TO BE LOADED

1. DATA ACQUISITION name 1
2. DATA ACQUISITION name 2
3. HDT COPY name 1 HDT ID 1
4. HDT-AM UPLINK name 1 HDT ID 4
5. SCENE PACKING name 1 HDT ID 3

>

Only previously defined operations are displayed.

The above example shows more operations than have been defined in the course of this text. Had no other operations been defined save the one operation defined earlier in this text, only the one defined would have been displayed.

Following the selection of item 1 - DATA ACQUISITION name 1 - an attempt is made by the software to make the proper matrix switch connections and to print the proper HDT tape labels. The matrix switch status is then read and if the correct connections have been made the message

MATRIX SWTICH CONNECTIONS VERIFIED

is displayed. Otherwise, the appropriate matrix switch error message is displayed. Then the following prompt is displayed:

MOUNT HDT MNSTTYYJJJXX ON THE XX-T #X HDDR

VERIFY HDDR WITH OCR WAND OR AT OPERATOR'S TERMINAL

>

The operator mounts the designated HDT on the designated HDDR, then verifies the HDDR by entering the HDDR identifier using either the OCR wand or the operator's terminal. If a read error occurs with the OCR wand, the message

OCR WAND READ ERROR

is displayed, and the VERIFY HDDR prompt is repeated. If an invalid input is entered either with the OCR wand or the operator's terminal, the message

INVALID INPUT - TRY AGAIN

is displayed and the VERIFY HDDR prompt is repeated. If the wrong HDDR identifier was entered, the message

WRONG HDDR - USE HDDR XX-T #X

is displayed, and the VERIFY HDDR prompt is repeated. Otherwise, the following prompt is displayed:

VERIFY HDT WITH OCR WAND OR AT OPERATOR'S TERMINAL

>

The operator verifies the HDT by entering the HDT identifier, using either the OCR wand or the operator's terminal. The analogous messages for OCR wand read errors and invalid inputs are displayed. If the wrong HDT identifier was entered, the message

WRONG HDT - USE HDT MNSTTYYJJJXX

is displayed, and the VERIFY HDT prompt is repeated. After the EDDR and HDT have been verified, the following prompt is generated:

DO YOU WANT TO START THE OPERATION? (Y OR N)

>

The operator may wait indefinitely to enter his response. If the response is Y, the operation monitor software begins execution, the operation name and definition parameters are deleted from mass storage, and the function menu is displayed. If the response is N, the operation name and definition parameters are deleted from mass storage, and the function menu is displayed. If at any time during operation definition or loading, the ESCAPE RETURN entry sequence is made in response to a prompt, the operation definition table and any load tables are deleted from memory and the function menu is displayed, but no tables are deleted from mass storage.

At the end of every complete operation the following message is displayed.

OPERATION NAME IS COMPLETE

The operator may now unload the 14-track and 28-track HDTs from their respective drives and send the 28-track HDT to the appropriate MIPS string input tape rack and the 14-track HDT to archival storage.

There are various support functions provided by the DRRTS system software including system status display and reports on past and present events. To illustrate these functions it is necessary to return to the menu.

SELECT FUNCTION

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERATION
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION
7. DELETE DATA ACQUISITION PROCESS
8. MANUAL OPERATIONS
9. STATUS

>

After the operator selects the STATUS function, the following menu is displayed:

SELECT STATUS DISPLAY

1. HDDR
2. MATRIX SWITCH
3. HDT COPY PROCESS REQUEST
4. HDT-AM PROCESS REQUEST
5. OPERATION DEFINITION TABLES

>

After entry of a valid selection, the status report is displayed on the formatted display terminal, and the following prompt is displayed:

DO YOU WANT HARD COPY? (Y OR N)

>

If the operator enters Y, the report is printed on the line printer or its backup device, then the function menu is displayed. If a status report is too long to fit on the formatted display screen, the operator may use CONTROL Q and CONTROL S keys to control the scrolling.

Examples of the various status reports pertinent to image data acquisition may be found in Figure 8.4-18, 8.4-19 and 8.4-25.

Status messages indicate to the operator that an operation proceeding normally has reached a particular state. Error messages indicate that an anomalous condition has been detected. These are of two types: warnings and errors. The former alert the operator to a condition that may or may not require his attention. When a warning is displayed, the operator's terminal bell rings once. An error indicates a condition that requires operator action. When an error is displayed, the bell rings twice.

An example of a condition that generates a warning is an HDDR exceeding an ECC threshold. The operator may choose to continue or to stop the operation using that HDDR. An example of a condition that generates an error is an HDDR hardware failure. The operation cannot proceed, and requires operator intervention.

Some sample status messages are:

MATRIX SWITCH CONNECTION OK

MSS DEMUX SYNCHRONIZED

RECORD HDDR MASTER LOCK

Some sample warning messages are:

WARNING - UNCORRECTED ERROR THRESHOLD EXCEEDED ON 14-T #1

WARNING - MSS DEMUX MAJOR FRAME SYNCH LOSS

WARNING - IRIG-A LOST ON 14-T #1

Some sample error messages are:

ERROR - REMOTE NOT SELECTED ON 14-T #2

HIT RETURN WHEN CORRECTED

>

ERROR - REMOTE COMMAND NOT ENABLED ON TAPE SEARCH UNIT

HIT RETURN WHEN CORRECTED

>

ERROR-MATRIX SWITCH DEVICE TIMEOUT

The various formatted displays that are available to the operator concerning image data acquisition are as follows:

a. Matrix switch configuration status

b. HDDR status

c. Data acquisition operation reports

   1. data acquisition with/without directory operation

   2. 30 scene R-tape generation

   3. retrospective directory generation.

Any formatted display may be printed on demand by the operator. In addition,

the system software will automatically cause the printing of any operation report at the conclusion of its associated operation. Figure 8.4-38 depicts a typical system log of events.

8.4.1.5.2 TGS Data Acquisition

The data flow for image data from the TGS is similar to the data flow for GSTDN/foreign image data. The main differences are the pre-operation requirement for TGS van checkout and TGS/DRRTS line test. See Figure 8.3-2 for the TGS data flow. Figure 8.3-3 depicts the various steps required for both types of image data acquisition. The following scenario will take the operator through the steps required for processing image data from the TGS.

After booting the operating system, the operator logs on as follows: (ƀ represents a space)

>HELƀDRRTS/XXX

where XXX are the operator's initials. DRRTS execution is started by entering the following:

>@DRRTS

This causes the execution of command file DRRTS.CMD, which loads and starts the execution of the four DRRTS tasks. The operator interface task loads the run time parameters from the file RUNTIM.PRM, performs other initialization activities, then displays the following message:

DRRTS INITIALIZATION COMPLETE

After this message is printed, the following function menu is displayed:

SELECT FUNCTION

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERATION
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION
7. DELETE DATA ACQUISITION PROCESS
8. MANUAL OPERATIONS
9. STATUS

>

The > at the bottom indicates where the operator response is echoed on the screen. The operator enters the item number of the function he wishes to select, then hits RETURN. If he enters an invalid input, the message INVALID INPUT - TRY AGAIN is displayed, then the menu is displayed again. This is true for all DRRTS prompts. If he enters a valid input, a prompt/response sequence is initiated for the function chosen. Examples of these prompt/response sequences are detailed in the following paragraphs. If the operator responds to any prompt by hitting the ESCAPE then the RETURN keys, the function menu is regenerated and the current key-in sequence is aborted.

For the purposes of this discussion only the prompt/response path for 14-track HDDR input/28-track output will be followed.

After the operator selects DEFINE OPERATION (1), the following menu is displayed:

1. HDT-R GENERATION
2. HDT COPY
3. HDT-AM UPLINK
4. RETROSPECTIVE DIRECTORY GENERATION
5. SCENE PACKING
6. LINE TEST

>

After selecting HDT-R GENERATION (1) the following prompt is displayed.

ENTER OPERATION NAME (1-6 ALPHABETIC CHARACTERS)

If a non-alphabetic or a name in excess of 6 characters is entered the "invalid input" error message is displayed and the operator is reprompted for the operation name. The operation name is an arbitrary group of characters used within the system to distinguish between operations when multiple operations are on-going.

After the operator enters the operation name, the following menu is displayed:

SELECT INSTRUMENT TYPE

1. MSS
2. TM

>

For the purpose of discussion the entry made is (1) or MSS. Following this entry the following menu is displayed:

SELECT DATA SOURCE

1. TGS
2. DOMSAT
3. HDT-GM

>

Since the input source is TGS, the first or the TGS selection is made. Following this entry the following menu is displayed:

SELECT DATA RATE

1. REAL-TIME
2. 2 x REAL-TIME
3. 3 x REAL-TIME

SELECT RECORDING (DESTINATION) HDDR

1. 28-T #1
2. 28-T #2
3. 28-T #3
4. 28-T #4

>

Following the recording HDDR selection, the following prompt is displayed:

DO YOU WANT A DIRECTORY: (Y OR N)

>

For the purposes of this discussion the response to the above prompt will be Y (yes). Figure 8.4-21 depicts a typical directory.

Following the directory generation prompt/response, the message is displayed.

OPERATION XXXXXX DEFINITION COMPLETION

Once the operator has defined the operation to be performed and the above message is displayed, the system will once again display the original (first) menu on the KCRT screen:

SELECT OPERATION TYPE

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERAITON
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION
7. DELETE DATA ACQUISITION PROCESS
8. MANUAL OPERATIONS
9. STATUS.

>

To proceed with the acquisition of image data, the next selection made by the operator will be item 2 - LOAD OPERATION.

After LOAD OPERATION is selected, the following menu is displayed:

SELECT OPERATION TO BE LOADED

1. DATA ACQUISITION name 1
2. DATA ACQUISITION name 2
3. HDT COPY name 1 HDT ID 1
4. HDT-AM UPLINK name 1 HDT ID 4
5. SCENE PACKING name 1 HDT ID 3

>

Only previously defined operations are displayed.

The above example shows more operations than have been defined in the course of this text. Had no other operations been defined save the one operation defined earlier in this text, only the one defined would have been displayed.

Following the selection of item 1 - DATA ACQUISITION name 1 - an attempt is made by the software to make the proper matrix switch connections and to print the proper HDT tape labels. The matrix switch status is then read and if the correct connections have been made the message

MATRIX SWTICH CONNECTIONS VERIFIED

is displayed. Otherwise, an appropriate matrix switch error message is displayed. Then the following prompt is displayed:

MOUNT HDT MNSTTYYJJJXX ON THE XX-T #X HDDR

>

The operator mounts the designated HDT on the designated HDDR. After the HDT has been mounted, the following prompt is generated:

DO YOU WANT TO START THE OPERATION? (Y OR N)

>

The operator may wait indefinitely to enter his response. If the response is Y, the operation monitor software begins execution, the operation name and definition parameters are deleted from mass storage, and the function menu is displayed. If the response is N, the operation name and definition parameters are deleted from mass storage, and the function menu is displayed. If at any time during operation definition or loading, the ESCAPE RETURN entry sequence is made in response to a prompt, the operation definition table and any load tables are deleted from memory and the function menu is displayed, but no tables are deleted from mass storage.

At the end of every complete operation the following message is displayed.

OPERATION NAME IS COMPLETE

There are various support functions provided by the DRRTS system software including system status display and reports on past and present events. To illustrate these functions it is necessary to return to the menu.

SELECT FUNCTION

1. DEFINE OPERATION
2. LOAD OPERATION
3. CANCEL OPERATION
4. UNLOAD OPERATION
5. RELEASE PROCESS
6. DELETE OPERATION

7. DELETE DATA ACQUISITION PROCESS

8. MANUAL OPERATIONS

9. STATUS

>

After the operator selects the STATUS function, the following menu is displayed:

SELECT STATUS DISPLAY

1. HDDR

2. MATRIX SWITCH

3. HDT COPY PROCESS REQUEST

4. HDT-AM PROCESS REQUEST

5. OPERATION DEFINITION TABLES

>

After entry of a valid selection, the status report is displayed on the formatted display terminal, and the following prompt is displayed:

DO YOU WANT HARD COPY? (Y OR N)

>

If the operator enters Y, the report is printed on the line printer or its backup device, then the function menu is displayed. If a status report is too long to fit on the formatted display screen, the operator may use CONTROL Q and CONTROL S keys to control the scrolling.

Examples of the various status reports pertinent to image data acquisition may be found in Figures 8.4-18, 8.4-19 and 8.4-25.

Status messages indicate to the operator that an operation proceeding normally has reached a particular state. Error messages indicate that an anomalous condition has been detected. These are of two types: warnings and errors. The former alert the operator to a condition that may or may not require his attention. When a warning is displayed, the operator's terminal bell rings once. An error indicates a condition that requires operator action. When an error is displayed, the bell rings twice.

An example of a condition that generates a warning is an HDDR exceeding an ECC threshold. The operator may choose to continue or to stop the operation using that HDDR. An example of a condition that generates an error is an HDDR hardware failure. The operation cannot proceed, and requires operator intervention.

Some sample status messages are:

MATRIX SWITCH CONNECTION OK

MSS DEMUX SYNCHRONIZED

RECORD HDDR MASTER LOCK

Some sample warning messages are:

WARNING - UNCORRECTED ERROR THRESHOLD EXCEEDED ON 14-T #1

WARNING - MSS DEMUX MAJOR FRAME SYNCH LOSS

WARNING - IRIG-A LOST ON 14-T #1

Some sample error messages are:

ERROR - REMOTE NOT SELECTED ON 14-T #2

HIT RETURN WHEN CORRECTED

>

ERROR - REMOTE COMMAND NOT ENABLED ON TAPE SEARCH UNIT

HIT RETURN WHEN CORRECTED

>

ERROR-MATRIX SWITCH DEVICE TIMEOUT

The various formatted displays that are available to the operator concerning image data acquisition are as follows:

a. Matrix switch configuration status

b. HDDR status

c. Data acquisition operation reports

   1. data acquisition with/without directory operation

   2. 30 scene R tape generation

   3. retrospective directory generation.

Any formatted display may be printed on demand by the operator. In addition, the system software will automatically cause the printing of any operation report at the conclusion of its associated operation. Figure 8.4-38 depicts a typical system log of events.

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8.4.1.5.3 Image Data Acquisition Reports

ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO REF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. MODE STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HOT COPY STATUS 5. HDT-44 UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 8.4-15 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO REF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" :

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```
ACTION                              SYSTEM RESPONSE

SELECT <LOAD OPERATION>
TYPE "4(C/R)"                       DORTS WILL RESPOND
                                          "PLEASE SELECT OPERATION TYPE
                                              1.  HDT-R GENERATION
                                              2.  HDT COPY
                                              3.  HDT-AM UPLINK
                                              4.  PLAYBACK
                                              5.  RETROSPECTIVE DIRECTORY GENERATION
                                              6.  SCENE PACKING
                                              7.  MSS LINE TEST
                                              8.  TM LINE TEST
                                              9.  HDT COPY LINE TEST"

SELECT <HDT-R GENERATION>
TYPE "1(C/R)"                       DORTS WILL RESPOND
                                          "PLEASE SELECT OPERATION
                                              1.  TEST4"

TYPE "1(C/R)"                       ON THE VT-78 AND THE OPERATOR'S TERMINAL, DORTS WILL RESPOND
                                          "MOUNT HDT L40NC0100101 ON THE 14-T  02 HDDR
                                           VERIFY HDDR WITH OCR WAND"

SET 14-TRACK 02 VERIFIED
SPEED TO 120 FOR PLAYBACK
ON THE VT-78 TERMINAL.
USE THE OCR WAND TO READ THE
HDDR ID FROM THE HDDR, OR
TYPE "14-T  02(C/R)"                DORTS WILL RESPOND
                                          "VERIFY HDT-ID WITH OCR WAND"

USE THE OCR WAND TO READ THE
HDT-ID FROM THE HDT, OR
TYPE "L40NC0100101(C/R)"            DORTS WILL RESPOND
                                          "MOUNT HDT L40NR0100101 ON THE 20-T  01 HDDR
                                           VERIFY HDDR WITH OCR WAND"

USE THE OCR WAND TO READ THE
HDDR ID FROM THE HDDR, OR
TYPE "20-T  01(C/R)"                DORTS WILL RESPOND
                                          "VERIFY HDT-ID WITH OCR WAND"

USE THE OCR WAND TO READ THE
HDT-ID FROM THE HDT, OR
TYPE "L40NR0100101(C/R)"            ON THE OPERATOR'S TERMINAL, DORTS WILL RESPOND
                                          "DO YOU WANT TO START THE OPERATION ?  (Y OR N)"

ON THE OPERATOR'S TERMINAL,
TYPE "Y(C/R)" AND WAIT FOR
THE OPERATION TO START              DORTS WILL RESPOND
                                          "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED
                                           PLEASE SELECT FUNCTION
                                              1.  DEFINE PROCESS
                                              2.  DELETE PROCESS
                                              3.  DEFINE OPERATION
                                              4.  LOAD OPERATION
                                              5.  CONTROL OPERATION
                                              6.  CANCEL OPERATION
                                              7.  DELETE OPERATION
                                              8.  RELEASE PROCESS TO HMP.
                                              9.  MANUAL OPERATIONS
                                             10.  STATUS
                                             11.  ABOUT DORTS
                                             12.  END OPERATION"
                                    WHEN THE OPERATION HAS STARTED, DORTS WILL RESPOND
                                          "OPERATION: TEST4 , STARTED"
```

ACTION	SYSTEM RESPONSE
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 8.4-18 WILL BE DISPLAYED ON THE VT-78 THEN, DRRTS WILL RESPOND "HOW MANY HAND COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINT THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <CONTROL OPERATION> TYPE "5(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT CONTROL FUNCTION 1. PAUSE 2. CONTINUE 3. END"
SELECT <PAUSE> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-R GENERATION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"

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IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 10:56:02

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	MODE	COMPLETION DATE	COMPLETION TIME
1. TESTA	ACTIVE	ACTIVE	NOT DEF	L4AHR8100101	28-T 01		
2. TESTB	NOT DEF	NOT DEF	NOT DEF	L4AHR8100102			
3. TESTC	NOT DEF	NOT DEF	NOT DEF	L4AHR8100103			
4. TESTD	NOT DEF	NOT DEF	NOT DEF	L4AHR8100104			
5. TESTE	NOT DEF	NOT DEF	NOT DEF	L4AHR8100105			
6. TESTF	NOT DEF	NOT DEF	NOT DEF	L4AHR8100106			
7. TESTG	NOT DEF	NOT DEF	NOT DEF	L4AHR8100107			
8. TESTH	NOT DEF	NOT DEF	NOT DEF	L4AHR8100108			
9. TESTI	NOT DEF	NOT DEF	NOT DEF	L4AHR8100109			
10. ATEST	NOT DEF	NOT DEF	NOT DEF	L4AHA8136601			

TOTAL NUMBER OF PROCESS REQUESTS: 10

Figure 8.4-18. Image Data Acquisition Status Report During R-Tape Generation

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)" AND WAIT FOR THE OPERATION TO PAUSE	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS PAUSED, DRRTS WILL RESPOND "OPERATION; TESTA , PAUSED"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. NODE STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HOT COPY STATUS 5. KOT-AQ UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 8.4-19 WILL BE DISPLAYED ON THE VT-78 THEN, DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <CONTROL OPERATION> TYPE "5(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT CONTROL FUNCTION 1. PAUSE 2. CONTINUE 3. END"

IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 10:56:35

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR	COMPLETION DATE	COMPLETION TIME
1. TESTA	PAUSED	PAUSED	NOT DEF	L4MHR8100101	20-T #1		
2. TESTB	NOT DEF	NOT DEF	NOT DEF	L4MHR8100102			
3. TESTC	NOT DEF	NOT DEF	NOT DEF	L4MHR8100103			
4. TESTD	NOT DEF	NOT DEF	NOT DEF	L4MHR8100104			
5. TESTE	NOT DEF	NOT DEF	NOT DEF	L4MHR8100105			
6. TESTF	NOT DEF	NOT DEF	NOT DEF	L4MHR8100106			
7. TESTG	NOT DEF	NOT DEF	NOT DEF	L4MHR8100107			
8. TESTH	NOT DEF	NOT DEF	NOT DEF	L4MHR8100108			
9. TESTI	NOT DEF	NOT DEF	NOT DEF	L4MHR8100109			
10. ATEST	NOT DEF	NOT DEF	NOT DEF	L4MHA8136601			

TOTAL NUMBER OF PROCESS REQUESTS: 10

Figure 8.4-19. Image Data Acquisition Status Report With Paused Operation

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ACTION	SYSTEM RESPONSE
SELECT <CONTINUE> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-R GENERATION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"
TYPE "1(C/R)" AND WAIT FOR THE OPERATION TO CONTINUE	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS BEEN CONTINUED, DRRTS WILL RESPOND "OPERATION: TESTA , CONTINUED"
SELECT <CANCEL OPERATION> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-R GENERATION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RE "DISMOUNT HDT L4#HG8100191 FROM THE 14-T 02 HDD VERIFY HDDR WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
ON THE VT-78 TERMINAL, USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "14-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4HHG0100101(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4HHR0100101 FROM THE 20-T 01 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4HHR0100101(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HNF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS BEEN CANCELLED, DRRTS WILL RESPOND "OPERATION: TESTA , CANCELLED"
ON THE OPERATOR'S TERMINAL, SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. DSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST
SELECT <HDT-R GENERATION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L4HHG0100101 ON THE 14-T 02 HDDR VERIFY HDDR WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
ON THE VT-78 TERMINAL. USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "14-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4MHG8100101(C/R)"	DRRTS WILL RESPOND "MOUNT HDT L4MHR8100101 ON THE 28-T 01 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
USE THE OCR WAND OR READ THE HDT-ID FROM THE HDT, OR TYPE "L4HHR010G101(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
ON THE OPERATOR' TERMINAL, TYPE "Y(C/R)" AND WAIT FOR THE OPERATION TO START	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED" PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTA , STARTED"
ALLOW THE TAPE TO RECORD UNTIL 206.09:29:00.0, THEN SELECT <CONTROL OPERATION> TYPE "5(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT CONTROL FUNCTION 1. PAUSE 2. CONTINUE 3. END"
SELECT <END> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"
TYPE "1(C/R)" AND WAIT FOR THE OPERATION TO COMPLETE	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTA , COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-DR UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. ABS LINK TEST 8. TM LINK TEST 9. HDT COPY LINK TEST"

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ACTION	SYSTEM RESPONSE
SELECT <HDT-R GENERATION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTA"
TYPE "5(C/R)"	ON THE VT-70 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4MMG8100101 FROM THE 16-T #2 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-70 TERMINAL, USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "16-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDDR, OR TYPE "L4MMG8100101(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4MMR8100101 FROM THE 20-T #1 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T #1(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4MMR8100101(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"
ON THE OPERATOR'S TERMINAL TYPE "Y(C/R)"	THE FOLLOWING REPORTS WILL BE PRINTED ON THE LINE PRINTER HDT-R GENERATION REPORT (SHOWN IN FIGURE 8.4-20) HDT-R DIRECTORY FILE DUMP (SHOWN IN FIGURE 8.4-21) IMAGE QUALITY DATA FILE DUMP (SHOWN IN FIGURE 8.4-22) 2 HDT QUALITY FILE DUMPS (SHOWN IN FIGURES 8.4-23, 8.4-24) THEN, DRRTS WILL RESPOND "ARE THE RESULTS ACCEPTABLE ? (Y OR N)"
EXAMINE THE REPORTS, THEN TYPE "Y(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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                       HDT-R GENERATION REPORT                   DATE: 23-NOV-81
                                                                 TIME: 11:16:43
                                                      COMPLETION DATE: 23-NOV-81
                                                      COMPLETION TIME: 11:15:42

MODE OF RECEIPT: ALASKA    MISSION: LS-4     INSTRUMENT: MSS
HDT-R ID: L4MHR8100101     HDDR: 20-T  #1    UE:      0   CE:    1166
HDT-G ID: L4MHG8100101     HDDR: 14-T  #2    UE:      0   CE:    9026
                                                                          MAJR MIN
INTERVAL          START TIME                        STOP TIME             LOSS LOS
            IRIG-A          SPACECRAFT        IRIG-A          SPACECRAFT

   1.   327.15:57:13.9  226.06:34:51.8  327.16:06:21.4  226.06:43:59.6     1
   2.   327.16:06:23.3  306.09:39:14.4  327.16:12:20.6  306.09:45:00.5     0

TOTAL NUMBER OF INTERVALS:      2                      SCENE PACKING REQUIRED
ESTIMATED NUMBER OF SCENES:    35.0
```

Figure 8.4-20. HDT-R Generation Report

DIRECTORY FILE

DATE: 23-NOV-81
TIME: 11:16:59

NDT: L4NHR0100101 NDDR: N-3 DATA RATE: 15063 DATA SOURCE: ULA

ASSOCIATED FILE NAMES:
PAD002
IOD001

INTERVAL	SPACECRAFT START TIME	SPACECRAFT STOP TIME	IRIG TIME START TIME	IRIG TIME STOP TIME
1.	01226063051800	01226064359600	3271597139	3271606214
2.	01306093914410	01306096500500	3271600233	3271612206

NO. OF INTERVALS: 2

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Figure 8.4-21. Directory File Dump

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IMAGE QUALITY DATA

DATE: 23-NOV-81
TIME: 1[illegible]16:58

INPUT HDT: L4MMG8100101
OUTPUT HDT: L4NNNN100101

INTERVAL	SPACECRAFT TIME	SUBSTITUTED FOR SPACECRAFT TIME	MAJOR FRAME SYNC LOSS	MINOR FRAME SYNC FAULT	MINOR FRAME SYNC LOSS
1	01226063554710	N	N	Y	Y
	01226063554800	N	N	Y	Y
	01226063705600	Y	N	N	N
	01226064009770	N	N	Y	N
	01226064100620	N	N	Y	N
	01226064202600	N	N	Y	Y
	01226064202690	N	N	Y	Y
	01306093914410	N	Y	N	N
2	01306094027430	N	N	Y	Y
	01306094027520	N	N	Y	Y
	01306094027520	N	N	Y	Y
	01306094032440	N	N	Y	Y
	01306094032530	N	N	Y	Y
	01306094037060	N	N	Y	Y
	01306094037450	N	N	Y	Y
	01306094037540	N	N	Y	Y
	01306094041980	N	N	Y	Y
	01306094042070	N	N	Y	Y
	01306094046990	N	N	Y	Y
	01306094046990	N	N	Y	Y
	01306094047080	N	[illegible]	Y	Y
	01306094052480	N	N	Y	Y
	01306094052480	N	N	Y	Y
	01306094057010	N	N	Y	Y
	01306094057400	N	N	Y	Y
	01306094102500	N	N	Y	Y
	01306094102500	N	N	Y	Y
	01306094107510	N	N	Y	Y
	01306094107607	N	N	Y	Y
	01306094112430	N	N	Y	Y
	01306094112520	N	N	Y	Y
	01306094112520	N	N	Y	Y
	01306094117050	[illegible]	N	Y	Y
	01306094117440	N	N	Y	Y
	01306094117530	N	N	Y	Y
	01306094122540	N	N	Y	Y
	01306094122630	N	N	Y	Y
	01306094216810	N	N	Y	N
	01306094218940	N	N	Y	N
	01306094309520	N	N	Y	N
	01306094407600	N	N	Y	N
	01306094431990	N	N	Y	N
	01306094500580	N	N	Y	N

Figure 8.4-22. Image Quality Data File Dump

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:17:00

HDT: LGHHC0100101 MODE: H-2 DATA RATE: 15063 DATA SOURCE: ULA PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3060909539	16	0
3060909597	16	0
3060910060	137	0
3060910120	634	0
306091017[illegible]	22	0
3060910237	18	0
3060910296	15	0
3060910355	19	0
3060910413	16	0
3060910479	39	0
3060910538	15	0
3060910596	92	0
3060911055	16	0
3060911114	23	0
3060911173	13	0
3060911232	15	0
3060911291	17	0
3060911350	10	0
3060911409	515	0
3060911468	476	0
3060911526	73	0
3060911587	18	0
3060912045	1023	0
[illegible]0912104	4	0
[illegible]912163	873	0
[illegible]222	17	0
[illegible]	21	0
[illegible]	14	0
3060[illegible]	[illegible]	0
306091[illegible]	[illegible]	0
3060910570	[illegible]	0
3060918503	[illegible]	0
3060919044	[illegible]	[illegible]
3060919102	21	[illegible]
3060919160	25	[illegible]
3060919219	16	0
3060919278	19	0
3060919337	17	0
3060919396	15	0
3060919455	41	0
3060919514	17	0
3060919572	25	0
3060920031	18	0
3060920090	21	0
3060920149	28	0
3060920209	24	0
3060920268	26	0
3 0920326	20	0
3060920385	24	0
3060920444	31	0
3060920502	15	0
3060920563	21	0
3060921022	26	0
3060921081	16	0
3060921140	14	0
3060921198	23	0
3060921257	19	0
3060921317	21	0
3060921370	820	0
3060921436	20	0
3060921495	19	0

Figure 8.4-23. HDT Quality File Dump for HDT-G Tape

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:17:05

HDT: L4000010010l MODE: H-3 DATA RATE: 1500J DATA SOURCE: ULA PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271557071	0	0
3271557130	0	0
3271557200	0	0
3271557260	0	0
3271557319	0	0
3271557378	113	0
3271557437	0	0
3271557496	0	0
3271557550	0	0
3271558021	0	0
3271558080	16	0
3271558139	555	0
3271558197	0	0
3271558257	0	0
3271558316	0	0
3271558375	56	0
3271558434	0	0
3271558494	0	0
3271558553	0	0
3271559012	0	0
3271559072	0	0
3271559131	1	0
3271559190	0	0
3271559249	1	0
3271559309	0	0
3271559368	0	0
3271559427	0	0
3271559486	0	0
3271559545	0	0
3271600004	0	0
3271600064	0	0
3271600123	1	0
327160[illegible]		0
32[illegible]		0
		0
		0
		0
		0
		0
[illegible]474	0	
3271610533	0	
3271610592	3	
3271611051	1	
3271611111	0	
3271611171	0	0
3271611237	16	0
3271611297	0	0
3271611356	0	0
3271611415	0	0
3271611474	0	0
3271611533	0	0
3271611593	0	0
3271612052	0	0
3271612111	0	0
3271612170	0	0

Figure 8.4-24. HDT Quality File Dump for HDT-R Tape

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ACTION	SYSTEM RESPONSE
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT IDA STATUS TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION REPORT SHOWN IN FIGURE 8.4-25 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <DEFINE OPERATION> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MBS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <SCENE PACKING> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTA L4NNN8100101"
TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PLAYBACK MODE 1. 20-T #1 2. 20-T #2 3. 20-T #3 4. 20-T #4"
SELECT <20-T #1> TYPE "1(C/R)"	DRRTS WILL RESPOND "CURRENT CORRECTED ERRORS ALARM THRESHOLD FOR 20-T #1 IS 9999 ENTER NEW THRESHOLD, OR HIT RETURN TO USE CURRENT VALUE"
TYPE "9000(C/R)"	DRRTS WILL RESPOND "CURRENT UNCORRECTED ERRORS ALARM THRESHOLD FOR 20-T #1 IS 9999 ENTER NEW THRESHOLD, OR HIT RETURN TO USE CURRENT VALUE"

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IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 11:17:35

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR	COMPLETION DATE	COMPLETION TIME
1. TESTA	COMPLETE	COMPLETE	NOT DEF	L4MMR8100101	28-T 01	23-NOV-81	11:15:42
2. TESTB	NOT DEF	NOT DEF	NOT DEF	L4MMR8100102			
3. TESTC	NOT DEF	NOT DEF	NOT DEF	L4MMR8100103			
4. TESTD	NOT DEF	NOT DEF	NOT DEF	L4MMR8100104			
5. TESTE	NOT DEF	NOT DEF	NOT DEF	L4MMR8100105			
6. TESTF	NOT DEF	NOT DEF	NOT DEF	L4MMR8100106			
7. TESTG	NOT DEF	NOT DEF	NOT DEF	L4MMR8100107			
8. TESTH	NOT DEF	NOT DEF	NOT DEF	L4MMR8100108			
9. TESTI	NOT DEF	NOT DEF	NOT DEF	L4MMR8100109			
10. ATEST	NOT DEF	NOT DEF	NOT DEF	L4MMA8106601			

TOTAL NUMBER OF PROCESS REQUESTS: 10

Figure 8.4-25. Image Data Acquisition Status Report After R-Tape Generation

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ACTION                              SYSTEM RESPONSE

TYPE "9990(C/R)"                    DRRTS WILL RESPOND
                                          "CURRENT UNCORRECTED ERRORS ALARM THRESHOLD FOR ID-T  #2 IS 9990
                                           ENTER NEW THRESHOLD, OR HIT RETURN TO USE CURRENT VALUE"

TYPE "DO9(C/R)"                     DRRTS WILL RESPOND
                                          "DEFINE ALL SCENE PACKING OPERATIONS
                                           OPERATION  1
                                           PLEASE ENTER OPERATION NAME (1 TO 6 ALPHABETIC CHARS)"

TYPE "SPACKA(C/R)"                  DRRTS WILL RESPOND
                                          "PLEASE ENTER SCENE PACKED HDT TAPE LABEL ID (HHSTTTTJJJXX)"

TYPE "L4MMSS100120(C/R)"            DRRTS WILL RESPOND
                                          "STARTING INTERVAL NUMBER IS  1
                                           PLEASE ENTER THE ENDING INTERVAL NUMBER"

TYPE "1(C/R)"                       DRRTS WILL RESPOND
                                          "SCENE PACKING OPERATION SPACKA DEFINITION COMPLETE
                                           OPERATION  2
                                           PLEASE ENTER OPERATION NAME (1 TO 6 ALPHABETIC CHARS)"

TYPE "SPACKB(C/R)"                  DRRTS WILL RESPOND
                                          "PLEASE ENTER SCENE PACKED HDT TAPE LABEL ID (HHSTTTTJJJXX)"

TYPE "L4MMSS100121(C/R)"            DRRTS WILL RESPOND
                                          "STARTING INTERVAL NUMBER IS  2
                                           PLEASE ENTER THE ENDING INTERVAL NUMBER"

TYPE "2(C/R)"                       DRRTS WILL RESPOND
                                          "SCENE PACKING OPERATION SPACKB DEFINITION COMPLETE
                                           ALL SCENE PACKING OPERATIONS COMPLETE
                                           PLEASE SELECT FUNCTION
                                             1.  DEFINE PROCESS
                                             2.  DELETE PROCESS
                                             3.  DEFINE OPERATION
                                             4.  LOAD OPERATION
                                             5.  CONTROL OPERATION
                                             6.  CANCEL OPERATION
                                             7.  DELETE OPERATION
                                             8.  RELEASE PROCESS TO PMF
                                             9.  MANUAL OPERATIONS
                                            10.  STATUS
                                            11.  ABORT DRRTS
                                            12.  END OPERATION"
    SELECT <STATUS>
    TYPE "10(C/R)"                      DRRTS WILL RESPOND
                                              "PLEASE SELECT STATUS DISPLAY
                                                 1.  MODE STATUS
                                                 2.  MATRIX SWITCH STATUS
                                                 3.  IMAGE DATA ACQUISITION STATUS
                                                 4.  HDT COPY STATUS
                                                 5.  HDT-AM UPLINK STATUS
                                                 6.  PROCESS DEFINITION TABLE
                                                 7.  OPERATION DEFINITION TABLE"
```

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ACTION	SYSTEM RESPONSE
SELECT <OPERATION DEFINITION> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT SCENE PACKING TYPE "6(C/R)"	THE OPERATOR DEFINITION REPORT SHOWN IN FIGURE 8.4-26 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE OPERATION DEFINITION REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ACCEPT PORTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <SCENE PACKING> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. SPACKA 2. SPACKB"
SELECT <SPACKA> TYPE "1(C/R)"	ON THE VT-78 AND OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L0PHRD10010I ON THE 28-T #1 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL, USE THE OCR WAND TO READ THE HDDR-ID FROM THE HDDR, OR TYPE "28-T #1(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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```
                    OPERATION DEFINITION REPORT              DATE: 23-NOV-81
                                                             TIME: 11:19:12
OPERATION NAME: SPACKA
OPERATION TYPE: SCENE PACKING
PROCESS NAME: TESTA
DATA SOURCE: ALASKA
                          INPUT                OUTPUT

MATRIX SWITCH:            28-T  01             28-T  02
CORRECTED THRESHOLD:       5000                 5000
UNCORRECTED THRESHOLD:      500                  500
HDT-ID:                 L4MHR8100101          L4MHR8100120

            DATA RATES
RECORDED:     1 X MSS                   INSTRUMENT TYPE: MSS
PLAYBACK:     1 X MSS                   DEMUX:           MSS 01
RECORDING:    1 X MSS                   DIRECTORY:       YES

STARTING INTERVAL:     1
ENDING INTERVAL:       1
```

```
                    OPERATION DEFINITION REPORT              DATE: 23-NOV-81
                                                             TIME: 11:19:12
OPERATION NAME: SPACKB
OPERATION TYPE: SCENE PACKING
PROCESS NAME: TESTA
DATA SOURCE: ALASKA
                          INPUT                OUTPUT

MATRIX SWITCH:            28-T  01             28-T  02
CORRECTED THRESHOLD:       5000                 5000
UNCORRECTED THRESHOLD:      500                  500
HDT-ID:                 L4MHR8100101          L4MHR8100121

            DATA RATES
RECORDED:     1 X MSS                   INSTRUMENT TYPE: MSS
PLAYBACK:     1 X MSS                   DEMUX:           MSS 01
RECORDING:    1 X MSS                   DIRECTORY:       YES

STARTING INTERVAL:     2
ENDING INTERVAL:       2
```

Figure 8.4-26. Scene Packing Operation Definition Report

ACTION	SYSTEM RESPONSE
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4HHR0100101(C/R)"	DRRTS WILL RESPOND "MOUNT HDT L4HHR0100120 ON THE 28-T #2 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4HHR0100120(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
ON THE OPERATOR'S TERMINAL, TYPE "Y(C/R)" AND WAIT FOR THE OPERATION TO COMPLETE	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MKF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: SPACKA, STARTED" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: SPACKA, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINK TEST 8. TM LINK TEST 9. HDT COPY LINK TEST"
SELECT <SCENE PACKING> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION : 1. SPACKA"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4HHR0100101 FROM THE 28-T #1 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL, USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T #1(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4MHR8100101(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4MHR8100120 FROM THE 20-T 02 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4MHR8100120(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED. DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"
ON THE OPERATOR'S TERMINAL, TYPE "Y(C/R)"	THE FOLLOWING REPORTS WILL BE PRINTED ON THE LINE PRINTER: SCENE PACKING OPERATION REPORT (FIGURE 8.4-27) IMAGE QUALITY DATA FILE DUMP (FIGURE 8.4-28) DIRECTORY FILE DUMP (FIGURE 8.4-29) MASTER HDT QUALITY FILE DUMP (FIGURE 8.4-30) SCENE PACKED HDT QUALITY FILE DUMP (FIGURE 8.4-31) THEN, DRRTS WILL RESPOND "ARE THE RESULTS ACCEPTABLE ? (Y OR N)"
EXAMINE THE REPORTS, AND THEN TYPE "Y(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <SCENE PACKING> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. SPACKR"
TYPE "1(C/R)"	ON THE VT-10 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L4MHR8100101 ON THE 20-T 01 HDDR VERIFY HDDR WITH OCR WAND"

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```
                         SCENE PACKING REPORT                    DATE: 23-NOV-81
                                                                 TIME: 11:32:03
                                                      COMPLETION DATE: 23-NOV-81
                                                      COMPLETION TIME: 11:31:40

MODE OF RECEIPT: ALASKA    MISSION: LS-4    INSTRUMENT: MSS
HDT-R ID: L4MHR8100120     HDDR: 28-T  #2   UE:     0    CE: 22202
  OUTPUT: L4MHR8100101     HDDR: 28-T  #1   UE:  4952    CE: *****

INTERVAL         START TIME                          STOP TIME                  MAJR MINR
            IRIG-A          SPACECRAFT         IRIG-A          SPACECRAFT       LOSS LOSS

  1.  327.16:19:03.3  226.06:34:51.7  327.16:28:00.7  226.06:43:59.6       1    4

TOTAL NUMBER OF INTERVALS:      1
ESTIMATED NUMBER OF SCENES:    21.4
```

Figure 8.4-27. Scene Packing Report For First Scene Packing Operation

IMAGE QUALITY DATA

DATE: 23-NOV-81
TIME: 11:32:59

INPUT HDT: L4MHR8100101
OUTPUT HDT: L4MHN8100120

INTERVAL	SPACECRAFT TIME	SUBSTITUTED FOR SPACECRAFT TIME	MAJOR FRAME SYNC LOSS	MINOR FRAME SYNC FAULT	MINOR FRAME SYNC LOSS
1	81226063550710	N	N	Y	Y
	81226063554800	N	N	Y	Y
	81226063605660	N	N	Y	N
	81226063624060	N	N	Y	N
	81226063705600	Y	N	N	N
	81226063826780	N	N	Y	N
	81226063835420	N	N	Y	N
	81226063915680	N	N	Y	N
	81226064009770	N	N	Y	N
	81226064046610	N	N	Y	N
	81226064100620	N	N	Y	N
	81226064202600	N	N	Y	Y
	81226064202890	N	N	Y	Y
	81226064210560	N	N	Y	N
	81306093914410	N	Y	N	N

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Figure 8.4-28. Image Quality Data File Dump For First Scene Packing Operation

```
                          DIRECTORY FILE                 DATE: 23-NOV-81
                                                         TIME: 11:32:59

HDT: L4MHR8100120  HDDR: H-4  DATA RATE: 15063  DATA SOURCE: ULA

ASSOCIATED FILE NAMES:
     PAD004
     IOD002

INTERVAL            SPACECRAFT                        IRIG TIME
           START TIME       STOP TIME       START TIME     STOP TIME

   1.    81226063451710 81226064359600    3271619033     3271628087

NO. OF INTERVALS:  1
```

Figure 8.4-29. Directory File Dump For First Scene Packing Operation

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:33:00

HDT: L4HHR8100101 HDDR: H-3 DATA RATE: 15063 DATA SOURCE: ULA PROCESS: GATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271552407	0	0
3271552553	0	0
3271553352	32767	2520
3271553422	328	11
3271553489	0	0
3271553556	2850	21
3271557024	6100	2400
3271557093	0	0
3271557159	0	0
3271557222	0	0
3271557285	0	0
3271557345	0	0
3271557404	296	0
3271557463	0	0
3271557522	0	0
3271557581	0	0
3271558040	0	0
3271558099		0
3271558150		0
3271558210		0
32715582[illegible]		0
32715[illegible]		0
327[illegible]		
[illegible]	0	
[illegible]	0	
[illegible]	0	
[illegible]	0	
[illegible]	0	
[illegible]7567	0	
[illegible]1603028	1	0
3271603088	0	0
3271603148	0	0
3271603207	0	0
3271603271	0	0
3271603330	0	0
3271603389	0	0
3271603451	0	0
3271603511	0	0
3271603570	0	0
3271604029	0	0
3271604091	0	0
3271604151	1	0
3271604210	3	0
3271604269	1	0
3271604329	0	0
3271604390	0	0
3271604449	2	0
3271604509	0	0
3271604572	0	0
3271605032	0	0
3271605091	0	0
3271605150	0	0

Figure 8.4-30. HDT Quality Dump for Master Tape for First Scene Packing Operation

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:31:03

HDT: L4NRR8100120 HDDR: N-4 DATA RATE: 150AJ DATA SOURCE: ULA PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271618126	224	0
3271618192	10	0
3271618260	635	0
3271618329	9	0
3271618396	0	0
3271618460	352	0
3271618520	130	0
3271618589	355	0
3271619054	417	0
3271619116	32	0
3271619179	15	0
3271619238	0	0
3271619297	0	0
3271619355	1	0
3271619415	0	0
3271619474	0	0
3271619532	267	0
3271619591	106	0
3271620050	6	0
3271620109	7	0
3271620172	1	0
3271620233	0	0
3271620291		0
3271620351		0
327162041[illegible]		0
327162[illegible]		0
32716[illegible]		0
3271[illegible]		0
327[illegible]		0
3[illegible]		0
	6	
	1	
	5	
[illegible]6	0	
[illegible]209	0	
[illegible]25267	870	
[illegible]625329	0	
[illegible]625388	628	0
[illegible]71625447	0	0
3271625506	471	0
3271625569	0	0
3271626020	737	0
3271626087	0	0
3271626105	1	0
3271626205	0	0
3271626266	97	0
3271626325	0	0
3271626384	0	0
3271626447	0	0
3271626506	1	0
3271626565	1	0
3271627024	0	0

Figure 8.4-31. HDT Quality Dump for Scene Pack Tape for First Scene Packing Operation

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ACTION	SYSTEM RESPONSE
ON THE VT-70 TERMINAL, USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4HMR8100101(C/R)"	DRRTS WILL RESPOND "MOUNT HDTL4HMR3100121 ON THE 28-T 02 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4HMR8100121(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
ON THE OPERATOR'S TERMINAL, TYPE "Y(C/R)" AND WAIT FOR THE OPERATION TO COMPLETE	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HRF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: SPACAB, STARTED" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: SPACAB, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AF UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <SCENE PACKING> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. SPACKA 2. SPACKB"
TYPE "2(C/R)"	ON THE VT-70 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4HMR8100101 FROM THE 28-T 01 HDDR VERIFY HDDR WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
ON THE TT-70 TERMINAL, USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4MHR8100121(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4MHR8100121 FROM THE 20-T 01 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT-ID FROM THE HDT, OR TYPE "L4MHR8100121(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"
ON THE OPERATOR'S TERMINAL, TYPE "Y(C/R)"	THE FOLLOWING REPORTS WILL BE PRINTED ON THE LINE PRINTER SCENE PACKING OPERATION REPORT (FIGURE 8.4-32) IMAGE QUALITY FILE DUMP (FIGURE 8.4-33) DIRECTORY FILE DUMP (FIGURE 8.4-34) MASTER HDT QUALITY FILE DUMP (FIGURE 8.4-35) SCENE PACKED HDT QUALITY FILE DUMP (FIGURE 8.4-36)
EXAMINE THE REPORTS, AND THEN TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"

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```
                           SCENE PACKING REPORT                       DATE: 23-NOV-81
                                                                      TIME: 11:46:56
                                                           COMPLETION DATE: 23-NOV-81
                                                           COMPLETION TIME: 11:45:53

MODE OF RECEIPT: ALASKA     MISSION: LS-4     INSTRUMENT: MSS
HDT-R ID: L4MMR8100121      HDDR: 28-T  02    UE:     0     CE: 30444
  OUTPUT: L4MMR8100101      HDDR: 28-T  01    UE:     0     CE:   168

INTERVAL          START TIME                              STOP TIME                  MAJR MINR
            IRIG-A          SPACECRAFT           IRIG-A           SPACECRAFT       LOSS LOSS

   1.  327.16:36:27.3  306.09:39:14.4  327.16:42:31.9  306.09:45:00.5        0   30

TOTAL NUMBER OF INTERVALS:        1
ESTIMATED NUMBER OF SCENES:    13.5
```

Figure 8.4-32. Scene Packing Report For Second Scene Packing Operation

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IMAGE QUALITY DATA

DATE: 23-NOV-81
TIME: 11:47:02

INPUT HDT: L4MHK8100101
OUTPUT HDT: L4MHK8100121

INTERVAL	SPACECRAFT TIME	SUBSTITUTED FOR SPACECRAFT TIME	MAJOR FRAME SYNC LOSS	MINOR FRAME SYNC FAULT	MINOR FRAME SYNC LOSS
1	81306093916500	N	N	Y	N
	81306093945580	N	N	Y	N
	81306094005710	N	N	Y	N
	81306094027430	N	N	Y	Y
	81306094027520	N	N	Y	Y
	81306094027520	N	N	Y	Y
	81306094030490	N	N	Y	N
	81306094032440	N	N	Y	Y
	81306094032530	N	N	Y	Y
	81306094037060	N	N	Y	Y
	81306094037450	N	N	Y	Y
	81306094037540	N	N	Y	Y
	81306094041980	N	N	Y	Y
	81306094042070	N	N	Y	Y
	81306094046990	N	N	Y	Y
	81306094046990	N	N	Y	Y
	81306094047080	N	N	Y	Y
	81306094052480	N	N	Y	Y
	81306094052480	N	N	Y	Y
	81306094057010	N	N	Y	Y
	81306094057400	N	N	Y	Y
	81306094102500	N	N	Y	Y
	81306094102500	N	N	Y	Y
	81306094107510	N	N	Y	Y
	81306094107600	N	N	Y	Y
	81306094112430	N	N	Y	Y
	81306094112520	N	N	Y	Y
	81306094112520	N	N	Y	Y
	81306094117050	N	N	Y	Y
	81306094117440	N	N	Y	Y
	81306094117530	N	N	Y	Y
	81306094122540	N	N	Y	Y
	81306094122630	N	N	Y	Y
	81306094156860	N	N	Y	N
	81306094216910	N	N	Y	N
	81306094218940	N	N	Y	N
	81306094309520	N	N	Y	N
	81306094407600	N	N	Y	N
	81306094429950	N	N	Y	N
	81306094431990	N	N	Y	N
	81306094436020	N	N	Y	N
	81306094500500	N	N	Y	N
	81306094500670	Y	N	Y	Y

Figure 8.4-33. Image Quality Data File Dump For Second Scene Packing Operation

```
                              DIRECTORY FILE                    DATE: 23-NOV-81
                                                                TIME: 11:47:04

MDT: L4MHR8100121  MDDN: M-4  DATA RATE: 15063  DATA SOURCE: ULA

ASSOCIATED FILE NAMES:
     PAU006
     IOD003

INTERVAL          SPACECRAFT                         IRIG TIME
           START TIME      STOP TIME        START TIME       STOP TIME

   1.    813C6093914410 81306094500580   3271636273       3271642319

NO. OF INTERVALS:  1
```

Figure 8.4-34. Directory File Dump For Second Scene Packing Operation

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:47:04

HDT: L6RRR5100101 MODE: N-3 DATA RATE: 15063 DATA SOURCE: ULA PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271605323	0	0
3271605389	37	0
3271605456	0	0
3271605520	0	0
3271605587	0	0
3271606053	0	0
3271606120	0	0
3271606186	0	0
3271606251	1	0
3271606317	0	0
3271606377	0	0
3271606436	0	0
3271606495	0	0
3271606554	0	0
3271607013	0	0
3271607072	0	0
3271607131	0	0
3271607191	0	0
3271607250	0	0
3271607309	1	0
3271607368	0	0
3271607429	2	0
3271607488	0	0
3271607547	0	0
3271608006	0	0
3271608066	0	0
3271608125	0	0
3271608185	0	0
3271608246	34	0
3271608303	0	0
3271608362	0	0
3271608421	0	0
3271608481		
3271608542		
3271609001		
3271609060		
327160[illegible]		
327[illegible]		
[illegible]	0	0
[illegible]	0	0
[illegible]	0	0
[illegible]	0	0
[illegible]	0	0
[illegible]0585	2	0
[illegible]611044	0	0
[illegible]71611111	0	0
3271611179	0	0
3271611236	0	0
3271611295	0	0
3271611355	0	0
3271611414	0	0
3271611473	1	0
3271611532	0	0
3271611590	0	0
3271612050	0	0
3271612117	0	0
3271612179	0	0

Figure 8.4-35. HDT Quality File Dump for the Master Tape for the Second Scene Packing Operation

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 11:47:07

HDT: L6NNR81G0121 MODE: W-4 DATA RATE: 150MB DATA SOURCE: ULA PROCESS: DATACU

TRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271635366	0	0
3271635431	1	0
3271635499	4	0
3271635563	2	0
3271636029	294	0
3271636095	0	0
3271636161	10	0
3271636227	3	0
3271636293	2	0
3271636356	3	0
3271636415	0	0
3271636474	0	0
3271636533	0	0
3271636592	52	0
3271637051	0	0
3271637110	1	0
3271637169	0	0
3271637220	162	0
3271637286	1	0
3271637345	0	0
3271637405	2	0
3271637465	2	0
32716.7524	0	0
3271637583	11	0
3271638042	0	0
3271638101	99	0
3271638160	3	0
3271638219	0	0
3271638278	1	0
3271638337	1	0
3271638396	0	0
3271638455	0	0
3271638515	0	0
3271638574	0	0
3271639033		0
3271639092		0
327163[illegible]		0
32716[illegible]		0
[illegible]	17	
[illegible]	1	
[illegible]02	0	
[illegible]0141	0	
[illegible]640200	0	0
3271640259	0	0
3271640318	0	0
3271640377	2	0
3271640435	0	0
3271640494	0	0
3271640554	5	0
3271641013	0	0
3271641072	221	0
3271641139	0	0
3271641203	4	0
3271641263	1	0
3271641321	9	0
3271641381	1	0
3271641440	31	0
3271641499	0	0
3271641557	3	0
3271642023	309	0
3271642083	0	0
3271642142	99136	0
3271642204	0	0

Figure 8.4-36. HDT Quality File Dump for the Scene Packed Tape for the Second Scene Packing Operation

SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION PRODUCTION STATUS REPORT SHOWN IN FIGURE 8.4-37 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION PRODUCTION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 11:47:33

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR	COMPLETION DATE	COMPLETION TIME
1. TESTA	COMPLETE	COMPLETE	COMPLETE	L4MMR8100101	28-T 81	23-NOV-81	11:45:53
2. TESTB	NOT DEF	NOT DEF	NOT DEF	L4MMR8100102			
3. TESTC	NOT DEF	NOT DEF	NOT DEF	L4MMR8100103			
4. TESTD	NOT DEF	NOT DEF	NOT DEF	L4MMR8100104			
5. TESTE	NOT DEF	NOT DEF	NOT DEF	L4MMR8100105			
6. TESTF	NOT DEF	NOT DEF	NOT DEF	L4MMR8100106			
7. TESTG	NOT DEF	NOT DEF	NOT DEF	L4MMR8100107			
8. TESTH	NOT DEF	NOT DEF	NOT DEF	L4MMR8100108			
9. TESTI	NOT DEF	NOT DEF	NOT DEF	L4MMR8100109			
10. ATEST	NOT DEF	NOT DEF	NOT DEF	L4MMA8136601			

TOTAL NUMBER OF PROCESS REQUESTS: 10

Figure 8.4-37. Image Data Acquisition With Completed Process

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```
22-JAN-82  00:16:07   PLEASE SELECT PROCESS
22-JAN-82  00:16:07      1.  TGSACU   L4MHR8202102
22-JAN-82  00:16:08      2.  DHCVSX   L4MHR8202103
22-JAN-82  00:16:08      3.  DHCVDX   L4MHR8202104
22-JAN-82  00:16:09   3

22-JAN-82  00:16:10   WARNING: IRIG-A WILL BE RECORDED ON INPUT TAPE
22-JAN-82  00:16:11   PLEASE ENTER OPERATION NAME (1 TO 6 ALPHABETIC CHARS)
22-JAN-82  00:16:24   RETROD

22-JAN-82  00:16:25   PLEASE SELECT PLAYBACK      HDDR
22-JAN-82  00:16:25    1.  28-T  #1
22-JAN-82  00:16:26    2.  28-T  #2
22-JAN-82  00:16:26    3.  28-T  #3
22-JAN-82  00:16:26    4.  28-T  #4
22-JAN-82  00:16:29   1

22-JAN-82  00:16:30   CURRENT CORRECTED ERRORS ALARM THRESHOLD FOR 28-T  #1 IS 9999
22-JAN-82  00:16:30   ENTER NEW THRESHOLD, OR HIT RETURN TO USE CURRENT VALUE
22-JAN-82  00:16:32   1000

22-JAN-82  00:16:33   CURRENT UNCORRECTED ERRORS ALARM THRESHOLD FOR 28-T  #1 IS 9999
22-JAN-82  00:16:33   ENTER NEW THRESHOLD, OR HIT RETURN TO USE CURRENT VALUE
22-JAN-82  00:16:34   10

22-JAN-82  00:16:35   PLAYBACK DATA RATE IS THE MSS REAL-TIME RATE
22-JAN-82  00:16:35   PLEASE SELECT RECORDED  MSS DATA RATE
22-JAN-82  00:16:37   1

22-JAN-82  00:16:37   PLEASE SELECT MSS DEMUX (1 OR 2)
22-JAN-82  00:16:38   1

22-JAN-82  00:16:39   RETROSPECTIVE DIRECTORY GENERATION OPERATION RETROD DEFINITION COMPLETE
22-JAN-82  00:16:40   PLEASE SELECT FUNCTION
22-JAN-82  00:16:42   10

22-JAN-82  00:16:42   PLEASE SELECT STATUS DISPLAY
22-JAN-82  00:16:52   7

22-JAN-82  00:16:53   PLEASE SELECT OPERATION TYPE
22-JAN-82  00:16:57   5

22-JAN-82  00:16:58   PLEASE SELECT OPERATION
22-JAN-82  00:16:58      1.  IDA
22-JAN-82  00:16:58      2.  RETROS
22-JAN-82  00:16:59      3.  RETROD
22-JAN-82  00:17:18   3

22-JAN-82  00:17:21   HOW MANY HARD COPIES DO YOU WANT ?  (0-4)
22-JAN-82  00:17:24   1

22-JAN-82  00:17:26   PLEASE SELECT FUNCTION
22-JAN-82  00:17:33   1

22-JAN-82  00:17:33   PLEASE SELECT PROCESS TYPE
22-JAN-82  00:17:43   1

22-JAN-82  00:17:44   PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)
22-JAN-82  00:17:49   GMTORM

22-JAN-82  00:17:50   PLEASE ENTER              HDT TAPE LABEL ID (MMSTTYYJJJXX)
22-JAN-82  00:17:59   L4MHR8202105

22-JAN-82  00:17:59   IDA PROCESS GMTORM DEFINITION COMPLETE
22-JAN-82  00:18:00   PLEASE SELECT FUNCTION
```

Figure 3.4-38. Typical System Log of Events

SECTION 9

ARCHIVE GENERATION SCHEDULING

9.1 ENVIRONMENT/RESOURCES

9.1.1 HARDWARE REQUIREMENTS

Archive hardware scheduling is an MMF-M software transaction. It is implemented on the MMF-M, DEC 2050 system located in the GSFC Building 28, second floor computer room. Figure 5-5 describes the arrangement of the DEC2050 hardware and provides the equipment-unique ID numbers assigned to each hardware item.

9.1.2 SOFTWARE REQUIREMENTS

Archive generation scheduling is performed by the Ground Segment management subsystem (GMS) -- a software area within the MMF.

Two units of software comprise the archive generation scheduling transaction, namely,

a. Archive Process Request Generation Program (GPAGEN - computer program design specification LSD-MMF-CPD-2042).

b. MIPS/TIPS Data Allocation Program (GXIALO - computer program design specification LSD-MMF-CPD-2181).

9.2 OVERVIEW/BACKGROUND

9.2.1 SCOPE

MMF-M (multispectral scanner products) and MMF-T (thematic mapper products) use different, non interchangeable versions of archive generation scheduling. This document addresses the MMF-M version.

With respect to MMF-M, the scope of the archive generation scheduling process includes:

a. Analysis of the contents of the PCS Phase Two files to determine which R-tape scene intervals can be processed into A-tape scene intervals.

b. Selection of one of the three MIPS strings to perform the R-tape to A-tape processing.

c. The generation of an R-tape process request that authorizes data transfer from MMF-M to the selected MIPS string.

d. The generation of a move request which authorizes DRRTS to release specific R-tapes to the MIPS string assigned the processing task.

9.2.2.1 <u>Preceding/Succeeding Activities</u>

9.2.2.1.1 <u>Preceding Activities</u>

The PCS Phase Two completion notification transaction must have run successfully before archive generation scheduling can be implemented. PCS Phase Two processing is an intermediary software process that determines whether the data necessary to run archive generation scheduling has been accumulated and successfully processed.

PCS Phase Two processing consists of three units of software:

a. PCS Phase Two process request feedback (GPPCFB).

b. Ancillary package generation (GAAGEN).

c. HDTR directory inversion (GADIN).

GPPCFB contains the ID numbers of the HDT-R tapes awaiting processing. In addition, the contents of the R-tape is defined by scene ID and interval time span.

GAAGEN contains information on processed telemetry; for example, orbit numbers, mission, interval start-stop times and control point identification.

GADIN contains user request information such as user name, user ID number, scene request information, mission selection and sensor requirements.

In addition to the information discussed above, PCS Phase Two processing supplies the PCD/SCD file names stored in the DEC 2050 system.

9.2.2.1.2 Succeeding Activities

The archive generation transaction succeeds archive generation scheduling. This transaction is described in detail in Section 10.

9.3 FUNCTIONAL DESCRIPTION

9.3.1 OPERATIONAL OVERVIEW

As shown below, archive generation scheduling is the sixth product development software transaction in Scenario 2 - MSS Archive Generation Support.

SCENARIO 2 - MSS ARCHIVE GENERATION SUPPORT

a. PCS PHASE ONE SCHEDULING

b. PCS PHASE ONE COMPLETION NOTIFICATION

c. GSTDN DATA RECEIPT

d. PCS PHASE TWO SCHEDULING

e. PCS PHASE TWO COMPLETION NOTIFICATION

f. ARCHIVE GENERATION SCHEDULING

g. ARCHIVE COMPLETION NOTIFICATION

h. GHIT GENERATION

i. ARCHIVE DISSEMINATION SCHEDULING

j. ARCHIVE DISSEMINATION COMPLETION NOTIFICATION

k. EDC DATA RECEIPT

Archive generation scheduling (AGS) is the software mechanism for converting the DRRTS generated HDTR video R-tape into the MIPS generated A-tape. It accomplishes this activity either automatically or manually with two units of software:

a. MIPS Process Request generation (GPAGEN)

b. MIPS Data allocation (GXIALO)

and the Decnet data transfer system. Archive generation scheduling is performed nine times during an eight-hour work period. Seven of these runs are allocated to generating new A-tapes from new R-tapes. Two runs are reserved for reworking R-tapes that were not successfully processed previously. The combined output for the nine runs of AGS is 220 scenes per eight-hour work period.

Circumstances dictate whether archive generation scheduling is performed automatically or manually, and the MMF data processing planner decides which of the two modes will be employed. His decision can be predicated on:

a. The existence of R-tape problems

b. A requirement to process a small work load

c. A requirement to expedite a priority scene interval.

When archive generation scheduling is implemented manually, the data processing planner will prepare a list of prompts and responses -- applicable to GPAGEN and GXIALO -- for the production control specialist, who ultimately controls archive generation scheduling via interactive terminal.

In the automatic mode, the entire Scenario 2 - MSS Archive Generation Support is clock triggered periodically. Operator intervention is not required except to review and file hardcopy printouts.

9.3.2 FLOW PROCESS

Archive generation scheduling data flow is shown in Figure 9.3-1 and a description of the processes shown is summarized below.

Upon receipt, scene interval data is separated. CSF processes the telemetry and forwards it via disk file to PCS Phase One processing. Similarly, DRRTS processes the video portion and, after determining that the R-tape can be processed into an A-tape, enters the same scene information into the DRRTS directory.

MMF-M schedules the PCS Phase Two processing and sends the PCD files and R-tape information to PCS.

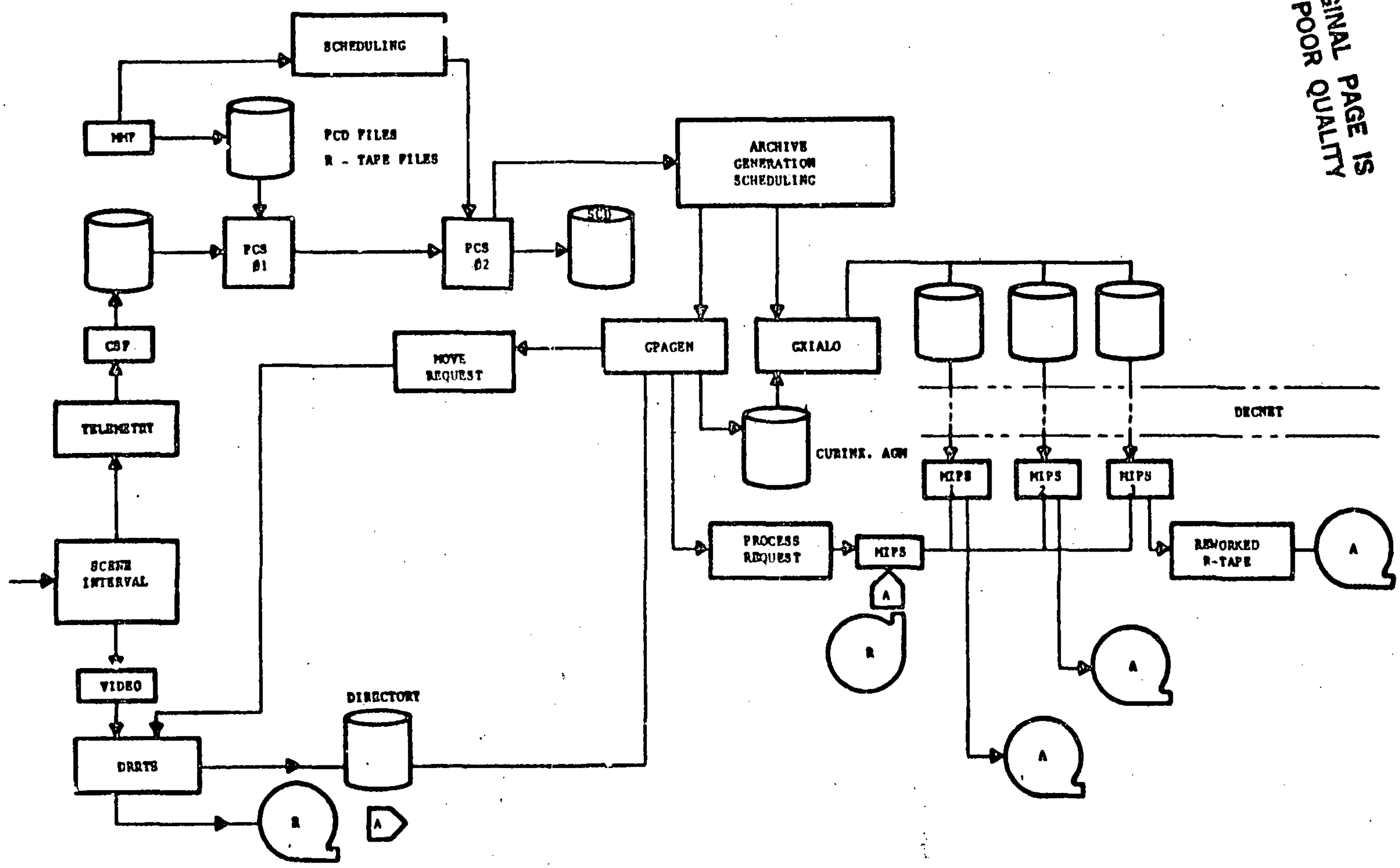

Figure 9.3-1. Data Flow Diagram Archive Generation Scheduling

PCS then generates the SCD files which are required to process an R-tape into an A-tape.

PCS Phase Two processing determines what scene data can be successfully processed and defines these scenes by their intervals.

As long as PCS Phase Two processing is complete for particular scene intervals, archive generation scheduling can be implemented.

Via GPAGEN, archive generation scheduling establishes a process request with MIPS and defines which scene intervals on specific R-tapes should be processed into A-tapes. GPAGEN identifies the PCD/SCD files required to process the R-tape in question and creates an ancillary file (CURINX.AGM) to contain this information. GPAGEN also generates the R-tape hardcopy move request and it is forwarded to DRRTS. This request authorizes DRRTS to log out a particular R-tape and forward it to MIPS for processing.

GXIALO, in turn, determines which of the three MIPS strings will actually process the R-tape sent from DRRTS. GXIALO reviews the information in the CURINX.AGM file and creates three ancillary files so that any one of the three MIPS strings can perform the R-tape processing.

The MIPS string selected by GXIALO to process the R-tape transfers one of the three ancillary files -- via Decnet -- into its own work area, and R-tape-to-A-tape processing commences.

To maintain R-tape tracking continuity and accountability, the first task the assigned MIPS string performs is to log the R-tape's receipt in the data base. Similarly, the last task performed is logging out the original R-tape to its next destination.

9.3.3 INPUT

The Phase Two Completion Notification transaction consists of:

a. PCS Phase Two Process Request Feedback (GPPCFB)

b. Ancillary Package Generation (GAAGEN)

c. HDTR Directory Inversion (GADIN)

and is the input to the MIPS Process Request Generation (GPAGEN) software unit. The CURINX.AGM file generated by GPAGEN is the input to the MIPS Data Allocation (GXIALO) software unit. The entire archive generation scheduling transaction, which consists of GPAGEN and GXIALO, requires the following information as input.

a. R tape ID

b. Scene interval

c. Scene information

d. Processed telemetry - mission, orbit number, scene interval and start-stop time

e. PCD/SCD files

f. Control point identification

g. User request information - user name, ID number, scene request, mission and sensor selection.

9.3.4 OUTPUT

GPAGEN generates the following output files.

a. One process request file for each HDTR interval recorded in DRRTS

b. SCD file

c. PCD file

d. Directory index file CURINX.AGM

e. Tape move request listing.

GPAGEN and GXIALO both produce the files listed below:

a. Processing summary file

b. Production log file.

9.3.5 HARDWARE/SOFTWARE SUMMARY MATRIX

A hardware/software summary matrix (reference Figure 9.3.5-1) is provided to identify the MMF-M/EDP equipment required to implement the archive generation scheduling transaction.

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DESCRIPTION	MODEL NUMBER	EQUIPMENT IDENTIFICATION NUMBER	GPAGEN	GXIALO
DISK DRIVE	PR06-AA	M01BOG18	X	X
DISK DRV W/CNTRLR	REP06-BA	M01CLG11	X	X
DISK DRIVE	PR01-BA	M01DLG20	X	X
DISK DRIVE	RP06-BA	M01DLG21	X	X
DISK DRIVE	RP06-BA	M01DOG22	X	X
DISK DRIVE	RP06-BA	M01DOG23	X	X
DISK DRIVE	RP06-BA	M01DOG24	X	X
DISK DRIVE	RP06-BA	M01DOG25	X	X
TAPE DRIVE	TU72	M016LG01	X	X
TAPE DRIVE	TU72	M016LG02	X	X
TAPE DRIVE	TU72	M016LG03	X	X
KEYBRD DISP	VT100	M0131LG03	X	X
KEYBRD DISP	VT100	M031LG04	X	X
MAGTAP DRV CNTRLR INTERFACE	TX02	M069LG01	X	X
FRONT END	DEC2050	M067G01	X	X
I/O CONSOLE	DEC2050	M068LG01	X	X
CPU	DEC2050	M018LG01	X	X

Figure 9.3.5-1. Archive Generation Scheduling Hardware/Software Summary Matrix

9.4 PROCESS OPERATIONS

A summary of the two units of software (GPAGEN and GXIALO) that comprise archive generation scheduling is presented in paragraph 9.4.1 and 9.4.2.

It is recommended that the CPDSs from which these summaries were extracted be addressed for supplemental data not included here.

9.4.1 ARCHIVE PROCESS REQUEST GENERATION PROGRAM (GPAGEN)

Computer Program Design Specification (CPDS) number LSD-MMF-CPD-2042

9.4.1.1 Unit Description and Purpose

GPAGEN determines the availability of HDT-R scenes for HDT-R to HDT-A processing and generates a process request file which is the mechanism for implementing HDT-R to HDT-A processing.

9.4.1.2 Unit Input Description

Input to GPAGEN is derived from the following sources.

a. MMF Data Base

1. Archive product area
2. Common parameters area
3. Ancillary area
4. Production area
5. Ground control point area
6. Directory area
7. Main image area
8. WRS parameters area

b. Processing request scratch file

c. KCRT input

1. HDT-R tape ID

2. HDT-R tape ID process decision

3. Interval process decision

Data flow through GPAGEN is shown in Figure 9.4.1-1.

GPAGEN can be run manually and automatically. When run automatically GPAGEN is part of the "archive completion notification" transaction and no operator intervention is required.

In the manual mode, the production control specialist implements GPAGEN via KCRT and enters the information supplied him by the data processing planner.

Typical input data supplied by the production control specialist is shown in Table 9.4.1-1.

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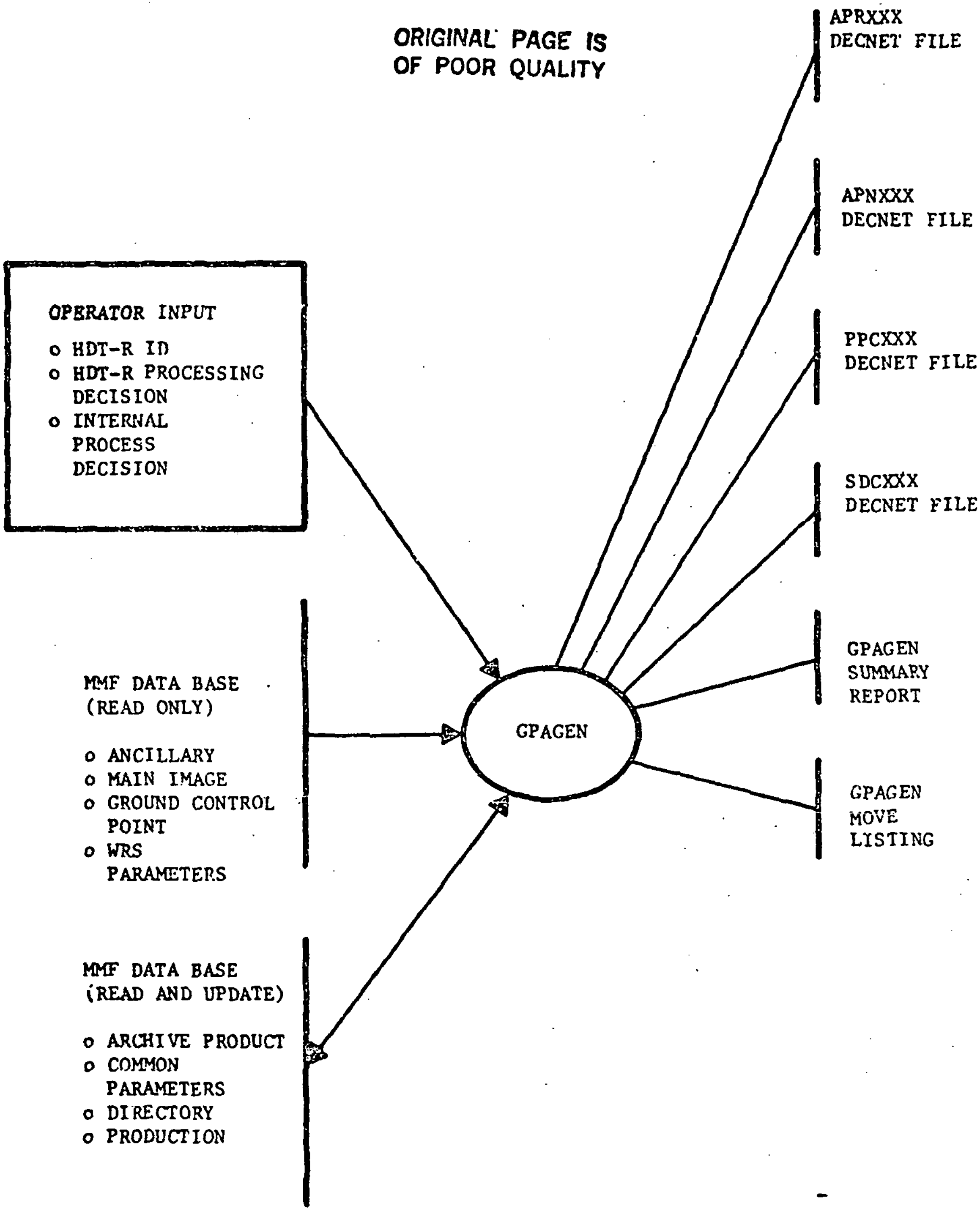

Figure 9.4.1-1. Archive Generation Process Request Generator (GPAGEN) Data Flow

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Table 9.4.1-1. Prompts and Responses for the GPAGEN Software Unit

PROMPT	RESPONSE	EXPLANATION
YOU ARE RUNNING GPAGEN. DO YOU WANT TO GENERATE R TO A PROCESS REQUESTS (Y/N)?	Y N	BEGIN EXECUTION TERMINATE EXECUTION
DO YOU WANT TO CONTINUE PROCESS REQUEST GENERATION (Y/N)?	Y N	CONTINUE EXECUTION TERMINATE EXEUCTION
PLEASE ENTER THE HDT-R ID:	LMSTTYYDDDXX	HDT-R ID
<tape info> DO YOU WISH TO PROCESS THE RECORD (Y/N)?	Y N	PROCESS HDT-R CANDIDATE FOR R TO A PROCESS REQUEST, SKIP OVER HDT-R
<interval info> DO YOU WISH TO PROCESS THIS INTERVAL (Y/N)?	Y N	PROCESS INTERVAL AS CANDIDATE FOR R TO A PROCESS REQUEST, SKIP OVER INTERVAL
<facility info> DO YOU WISH TO REROUTE THIS TAPE TO THE CORRECT FACILITY (Y/N)?	Y N	REROUTE TAPE AND CONTINUE PROCESSING DO NOT REROUTE TAPE SKIP OVER THE HDT-R

9.4.1.3 Unit Output Description

GPAGEN's output consists of the generation of several new files, the updating of existing data base files and hardcopy printouts.

When run manually, GPAGEN provides informational and error messages on the operator's KCRT as shown in Table 9.4.1-2.

Files created or updated by GPAGEN are listed below.

a. MMF Data Base
   1. Updated product acquisition record
   2. Updated archive/product record
   3. Updated HDT-R interval record
   4. Updated HDT-R scene record
   5. Updated common parameters record
b. Process request file
c. Archive generation ancillary data file
d. Payload correction data file
e. Systematic correction data file

Hardcopy printouts resulting from GPAGEN include:

a. Processing summary (reference Figure 9.4.1-2)
b. Production log
c. Move request listing; only printed if the HDT-R tape was not at its scheduled location and a move notice was required (reference Figure 9.4.1-3).

Table 9.4.1-2. GPAGEN Message/Action Matrix

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CATEGORY	MESSAGE	ACTION: DO NOT RERUN GPAGEN	INPUT DATA AS PROMPTED (MANUAL MODE)	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	NONE
FATAL	FATAL ERROR: DBMS UNSUCCESSFUL ______ OPERATION	X		X			
	FATAL ERROR: UNABLE TO FIND ______ RECORD	X		X			
	FATAL ERROR: ______ FILE HAS NO ______ RECORD	X			X		
	FATAL ERROR: ______	X			X		
	FATAL ERROR: DATA BASE CONFLICT ______						
	FATAL ERROR: TABLE SIZE TO HOLD PPC, SCD FILE NAMES NOT LARGE ENOUGH	X			X		
	FATAL ERROR: DIVIDE ERROR: FIELDS ARE ______	X			X		
ERROR	ERROR: HDT-R ID NOT CORRECTLY STATUSED AS "DRP"					X	
	ERROR: INCORRECT RESPONSE. RESPONSE MUST BE Y OR N		X			X	
	ERROR: INVALID HDT-R ID ⟨REASON⟩		X			X	
	ERROR: THE HDT-R ID ENTERED WAS NOT FOUND IN THE DATA BASE					X	
WARNING	WARNING: DATA BASE CONFLICT - HDT-R RECORD HAS NO INTERVALS					X	
INFO	INFO: ⟨ ⟩ NOT PROCESSED AS PPC, SCD FILES NOT ONLINE						X
	INFO: PROCESS REQUEST WILL NOW BE GENERATED. PLEASE WAIT...						X
	INFO: HDT-R ⟨ ⟩ WAS NOT PROCESSED - PER YOUR REQUEST						X
	INFO: THE HDT-R ID WAS NOT PROCESSED AS NO INTERVALS REQUIRED PROCESSING						X
	INFO: THERE WERE NO HDT-R RECORDS PROCESSED						X
OTHER	GPAGEN - END OF PROCESSING						X
	REFER TABLE B.2.1 ALSO						

```
LISTING   : GP0110                 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                    PAGE :        1
SUBSYSTEM :    GMS                          GODDARD SPACE FLIGHT CENTER                             DATE : 23-NOV-81
                                         LANDSAT MISSION MANAGEMENT FACILITY                        TIME :     11:03

 PROC MODE : AUTOMATIC               HDT-R PROCESS REQUEST GENERATION SUMMARY               DATABASE SENSOR TYPE : MSS
PROCESS REQ NUMBER     ARCHIVE PRODUCT ID SENSOR   INTERVALS    SCENES           FIRST INT START TIME       LAST INT STOP TIME

 MIPR13270001          L4MHR8122303      M          13          047               82266094500001           82266114000001
 MIPR13270002          L4MHR8128303      M          02          002               82266080900001           82266081845002
 MIPR13270003          L4MHR8114303      M          02          045               82266042011001           82266055200001
 MIPR13270004          L4MHR8100303      M          02          004               82267070800001           82267071000001
 MIPR13270005          L4MHR8100202      M          02          008               82267070035001           82267070735001
 MIPR13270006          L4MHR8100101      M          01          002               82266070035001           82266071530001
<<GPAGEN STUB: ICD CONFORMITY>>VARIOUS FIELDS IN THE  APR,AAN FILES NOT FILLED
THEY WILL BE FILLED FOLLOWING ICD CONFORMITY CHANGES TO BE IMPLEMENTED
GPAGEN-END OF PROCESSING
```

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Figure 9.4.1-2. Sample - GPAGEN Processing Summary

LISTING : 000910
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT [illegible] MANAGEMENT FACILITY

PAGE : 1
DATE : 23-NOV-81
TIME : 11103

TAPE/FILM ROLL MOVE REQUEST SUMMARY FOR GPAGEN

TAPE/ROLL ID.	C[illegible] FACILITY	SEND TO FACILITY
L4MHR8100101	DRT	MIP
L4MHR8100202	DRT	MIP
L4MHR8100303	DRT	MIP
L4MHR8114303	DRT	MIP
L4MHR8122303	DRT	MIP
L4MHR8128303	DRT	MIP

TOTAL TAPE/FILM MOVE REQUESTS FOR THIS FACILITY... 6

TOTAL TAPE/FILM MOVE REQUESTS FOR THIS PROGRAM.... 6

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Figure 9.4.1-3. Sample - GPAGEN Move Request Summary

All of the printouts should be reviewed by the production control specialist who ran GPAGEN and he should take action if any "aborts" or error conditions are disclosed. After reviewing the printouts, the production control specialist should file the hardcopies in their respective binders.

9.4.1.4 Frequency of Operation

As mentioned previously, GPAGEN is scheduled to be performed nine times in an eight-hour working period .

9.4.1.5 Detailed Operational Sequences

The job control language (JCL) required to implement GPAGEN is listed below.

9.4.1.5.1 Job Control Language for GPAGEN

GPAGEN can be implemented by keying either of the following statements:

a. @TAKE GPAGEN.CMD (for interactive processing)

b. SUBMIT GPAGEN.CTL (for batch processing)

9.4.1.5.2 Contents of GPAGEN.CMD "TAKE" File

GPAGEN.CMD

```
DELETE GPAGEN.SUM
DELETE GPAGEN.PLG
DELETE GPAGEN.UIL
DELETE GPAGEN.SCF
DELETE GPAGEN.MRL
DELETE GPAGEN.MVR
RUN GPAGEN
```

PRINT GPAGEN.SUM

PRINT GPAGEN.PLG

PRINT GPAGEN.UIL

PRINT GPAGEN.MRL

9.4.1.5.3 Contents of GPAGEN.CTL "SUBMIT" File

GPAGEN.CTL

@DELETE GPAGEN.SUM

@DELETE GPAGEN.PLG

@DELETE GPAGEN.UIL

@DELETE GPAGEN.SCF

@DELETE GPAGEN.MRL

@DELETE GPAGEN.MVR

@RUN GPAGEN

@PRINT GPAGEN.SUM

@PRINT GPAGEN.MRL

9.4.2 MIPS/TIPS DATA ALLOCATION PROGRAM (GXIALO) - COMPUTER PROGRAM DESIGN SPECIFICATION (CPDS) NUMBER LSD-MMF-CPD-2181

9.4.2.1 Unit Description and Purpose

GXIALO succeeds GPAGEN and allocates certain MMF data base files (files required to process HDT-R scene intervals into HDT-A scene intervals) to the MIPS string assigned the R-to-A processing task. The selection of a particular MIPS string to process HDT-R information is determined by the GXIALO software unit.

2-5

GXIALO will run automatically if it is incorporated in the command/control language that implements either the archive generation scheduler transaction, the archive completion notification transaction or the initial product completion transaction.

If GXIALO is run manually, the operator must supply certain common parameters information via interactive terminal:

a. Mode selection (manual/automatic)

b. Table of directories of the file names and IDs to be used in processing the HDT-R scene intervals

c. Table of valid process request file names

d. Data base sensor type (MSS or TM).

He may then process specific HDT-R scene intervals on a specific MIPS string as long as GPAGEN generated a process request for the selected scene intervals.

Refer to Figures 9.4.2-1 and 9.4.2-2 for a description of GXIALO's interface structure and flow diagram.

9.4.2.2 Unit Input Description

GXIALO requires the following inputs:

a. MMF data base

    1. Common parameters

    2. Directory

b. CURINX.AGM file created by GPAGEN

c. Operator prompt decisions (manual mode)

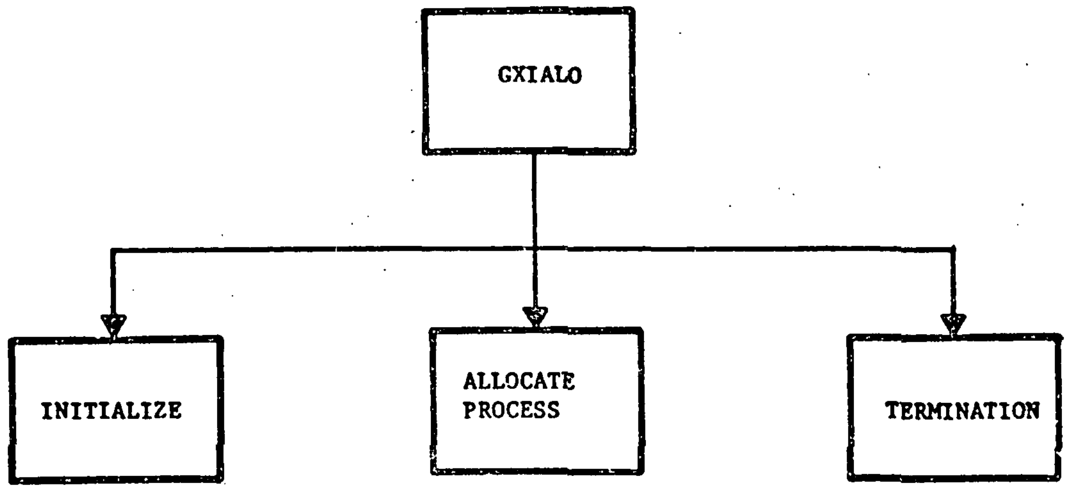

Figure 9.4.2-1. MIPS/TIPS Data Allocation Interface Structure

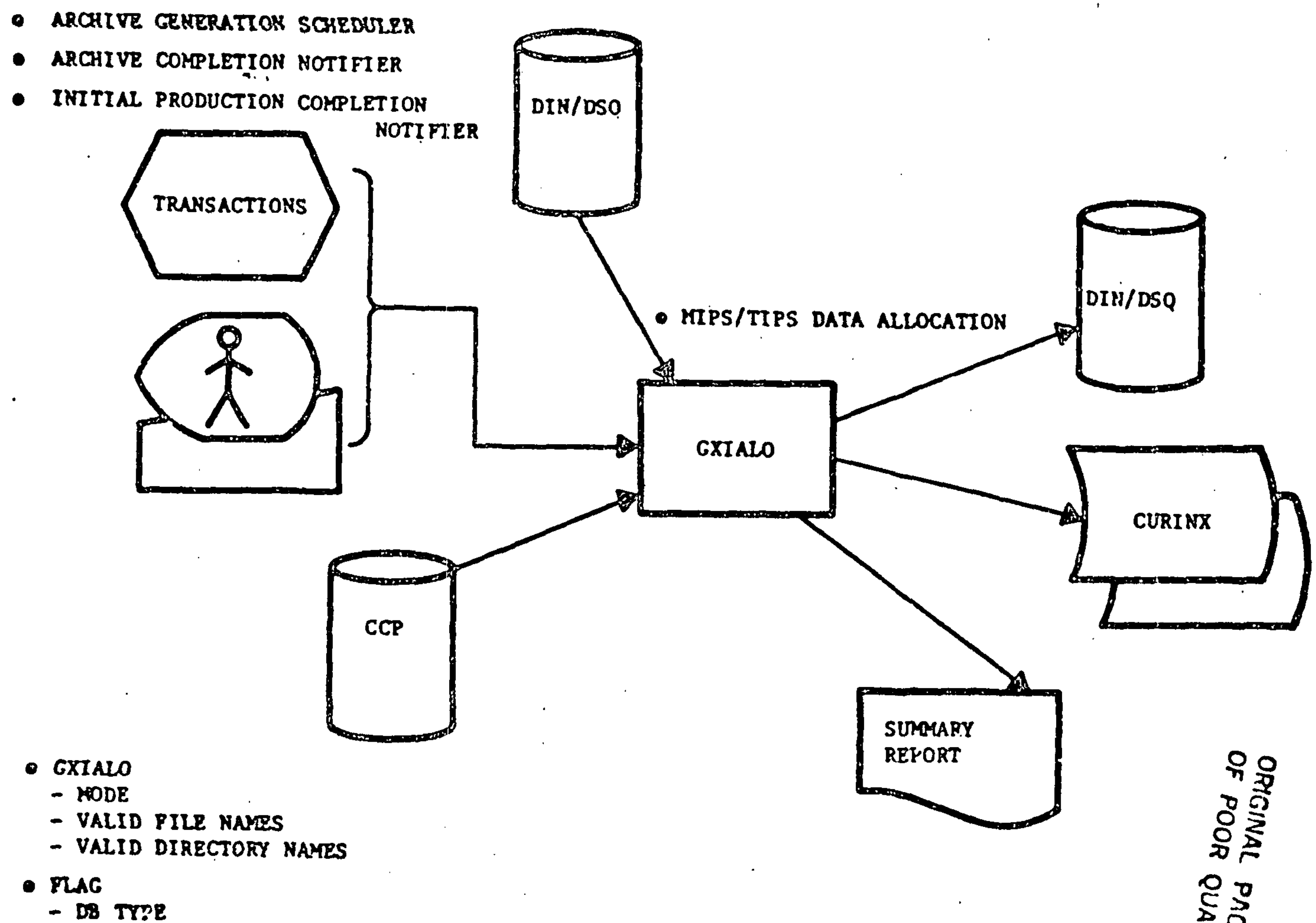

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Figure 9.4.2-2. MIPS/TIPS Data Allocation Flow Diagram

A sample of the prompt decisions required to run GXIALO manually is shown in Table 9.4.2-1 and Figure 9.4.2-3.

Table 9.4.2-1. Operator Interface Formats

PROMPT	INPUT	ACTION TAKEN
Do you wish to process this directory (Y/N)?	Y	Directory processed
	N	Directory not processed
Do you wish to continue processing this directory (Y/N)?	Y	Processing of directory continued
	N	Processing of directory stopped. Directory is rebuilt.
Do you wish to have this file allocated or placed in the ignore string (Y/N/X)?	Y	GXIALO called to get the string to allocate this file.
	N	File not processed
	X	File placed in the ignore string
Do you wish to proceed with GXIALO?	Y	Processing continued
	N	Processing stopped.

```
GXIALO      DATE: 16-DEC-81   TIME: 12:16
GXIALO
GXIALO
GXIALO
GXIALO
GXIALO      DO YOU WISH TO PROCEED WITH GXIALO PROCESSING(Y/N)?
GXIALO      Y
GXIALO
GXIALO
GXIALO
GXIALO      INFO: THE CURRENT DIRECTORY IS: PTB
GXIALO      DO YOU WISH TO PROCESS THIS DIRECTORY(Y/N)?
GXIALO      Y
GXIALO
GXIALO
GXIALO
GXIALO      INFO: THE CURRENT FILE NAME IS: EPR001
GXIALO      DO YOU WISH TO HAVE THIS FILE ALLOCATED (Y/N) OR PLACED IN IGNORE STRING (X)?
GXIALO      Y
GXIALO
GXIALO      INFO: THE FILE  EPR001 HAS BEEN ALLOCATED TO STRING 1
GXIALO
GXIALO
GXIALO      INFO: THE CURRENT FILE NAME IS: EPR002
GXIALO      DO YOU WISH TO HAVE THIS FILE ALLOCATED (Y/N) OR PLACED IN IGNORE STRING (X)?
GXIALO      Y
GXIALO
GXIALO      INFO: THE FILE  EPR002 HAS BEEN ALLOCATED TO STRING 3
GXIALO
GXIALO
GXIALO      INFO: THE CURRENT FILE NAME IS: EPR003
GXIALO      DO YOU WISH TO HAVE THIS FILE ALLOCATED (Y/N) OR PLACED IN IGNORE STRING (X)?
GXIALO      Y
GXIALO
GXIALO      INFO: THE FILE  EPR003 HAS BEEN ALLOCATED TO STRING 2
GXIALO      GXIALO-END OF PROCESSING
```

Figure 9.4.2-3. Sample Copy - GXIALO KCRT Input Prompt Display

9.4.2.3 Unit Output Description

GXIALO generates the following outputs:

a. MMF data base directory update

b. Error message KCRT display

c. Summary report (reference Figure 9.4.2-4)

d. Production log

A list of the messages displayed on the KCRT, when GXIALO is run manually, is shown in Table 9.4.2-2.

9.4.2.4 Frequency of Operation

GXIALO is run once for each HDT-R to HDT-A process request. Therefore, as part of archive generation scheduling, GXIALO will be implemented a maximum of nine times in an eight-hour work period.

9.4.2.5 Detailed Operational Sequences

GXIALO requires no operator intervention when clock triggered automatically as part of archive generation scheduling.

In the manual mode, input to GXIALO is performed by the MMF production control specialist via KCRT. All decisions and prompt responses required by GXIALO are prepared by the MMF data processing planner. It is, however, the production control specialist's responsibility to verify the completeness and format of this information before entering it via KCRT.

GXIALO can be implemented by executing the following CTL for automatic (batch) mode or CMD for manual (interactive) mode files:

```
LISTING   : GROUP                    NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                  PAGE :          1
SUBSYSTEM :   GMS                          GODDARD SPACE FLIGHT CENTER                              DATE : 16-DEC-81
                                        LANDSAT MISSION MANAGEMENT FACILITY                         TIME :      12:16
 DATA BASE SENSOR: MSS               MIPS COMPUTER STRING ALLOCATION SUMMARY REPORT          OPERATING MODE: MANUAL

     DIRECTORY        FILE        ALLOCATED/IGNORED        OPERATOR
       NAME                            STRING              RESPONSE

      PIN
                     EPR001              1                  ALLOCATE
                     EPR002              3                  ALLOCATE
                     EPR003              2                  ALLOCATE


                                          TOTAL NUMBER OF FILES ALLOCATED TO STRING 1  :    1
                                          TOTAL NUMBER OF FILES ALLOCATED TO STRING 2  :    1
                                          TOTAL NUMBER OF FILES ALLOCATED TO STRING 3  :    1
                                          TOTAL NUMBER OF FILES IGNORED                :    0
                                          TOTAL NUMBER OF FILES ALLOCATED              :    3

<<CATALO STUB>> CCP-COMMON-PARAM = CATALO2, NOT IN DATABASE UNTIL VERS 11, STUBBED NOW
<<CATALO STUB>> DSO-PROCESS-REQUEST-MODE, DSO-PROCESS-REQUEST-NUM-SCENES ALSO STUBBED
G(CALO-END OF PROCESSING
```

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Table 9.4.2-2. GXIALO Message/Action Matrix

CATEGORY	MESSAGE / ACTION	DO NOT RE-RUN GXIALO	TAKE GXIALO-ERR.CMD	DETERMINE AND PRINT DECNET FILE(S) IN ERR.	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATION	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
Fatal	Fatal Error: ---- Record not found	X						X	X
	Fatal Error: Invalid ---- record of APR file	X							X
	Fatal Error: The APR File is empty	X							X
	Fatal Error: ---- Record of APR File not found	X							X
Error	Error: Invalid response. Valid responses are Y or N					X			
	Error: Invalid response. Valid Responses are Y, N or X					X			
Info	Info: The current directory is ----				X				
	Info: The current file name is ----				X				
	Info: The associated files are ----				X				
	Info: The file has previously been allocated to the ignore string				X				
	Info: The file ---- has been allocated to string ----				X				
	Info: The file ---- is being temporarily ignored				X				

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a. @TAKE GXIALO.CMD (interactive mode)

b. SUBMIT GXIALO.CTL (batch mode)

The contents of the TAKE and SUBMIT files are listed below:

Contents of GXIALO.CMD "TAKE" File

```
GXIALO.CMD

     DELETE GXIALO.SUM

     DELETE GXIALO.PLG

     RUN GXIALO

     PRINT GXIALO.SUM

     PRINT GXIALO.UIL

     PRINT GXIALO.PLG
```

Contents of GXIALO.CTL "SUBMIT" File

```
@DELETE GXIALO.SUM

@DELETE GXIALO.UIL

@DELETE GXIALO.PLG

@RUN GXIALO

@PRINT GXIALO.SUM

@PRINT GXIALO.PLG
```

9.4.2.6 Control Mechanisms

Regardless of whether GXIALO is run manually or automatically, the quality of the processing will be monitored by the production control specialist running

the program. Hardcopy printouts are to be reviewed for abort or error messages and appropriate action taken. Primarily, KCRT error messages should be corrected by reviewing the inputs with the MMF systems analysts.

9.4.2.7 Record Keeping and Information Dissemination

After reviewing all hardcopy printouts, the production control specialist is responsible for entering these printouts in their respective program binders.

SECTION 10

MULTISPECTRAL SCANNER ARCHIVE GENERATION (MAG)

10.1 ENVIRONMENT/RESOURCES

The MAG activities are performed in the multispectral scanner image processing system (MIPS) area located in the computer room, first floor, Building 28, Goddard Space Flight Center (GSFC).

10.1.1 HARDWARE REQUIREMENTS

Three parallel strings of equipment are available. Two strings will support MAG. Each string is configured around a Digital Equipment Corporation VAX 11/780 computer. All strings are basically the same except for such minor peripherals as card reader, VT100 and Digitizer. Figure 10-1 is a simplified block diagram of MAG processing and equipment required.

10.1.2 SOFTWARE REQUIREMENTS

The MAG process consists of the following major packages of software:

a. Control and communications (that portion applying to MAG)

b. MSS archive generation

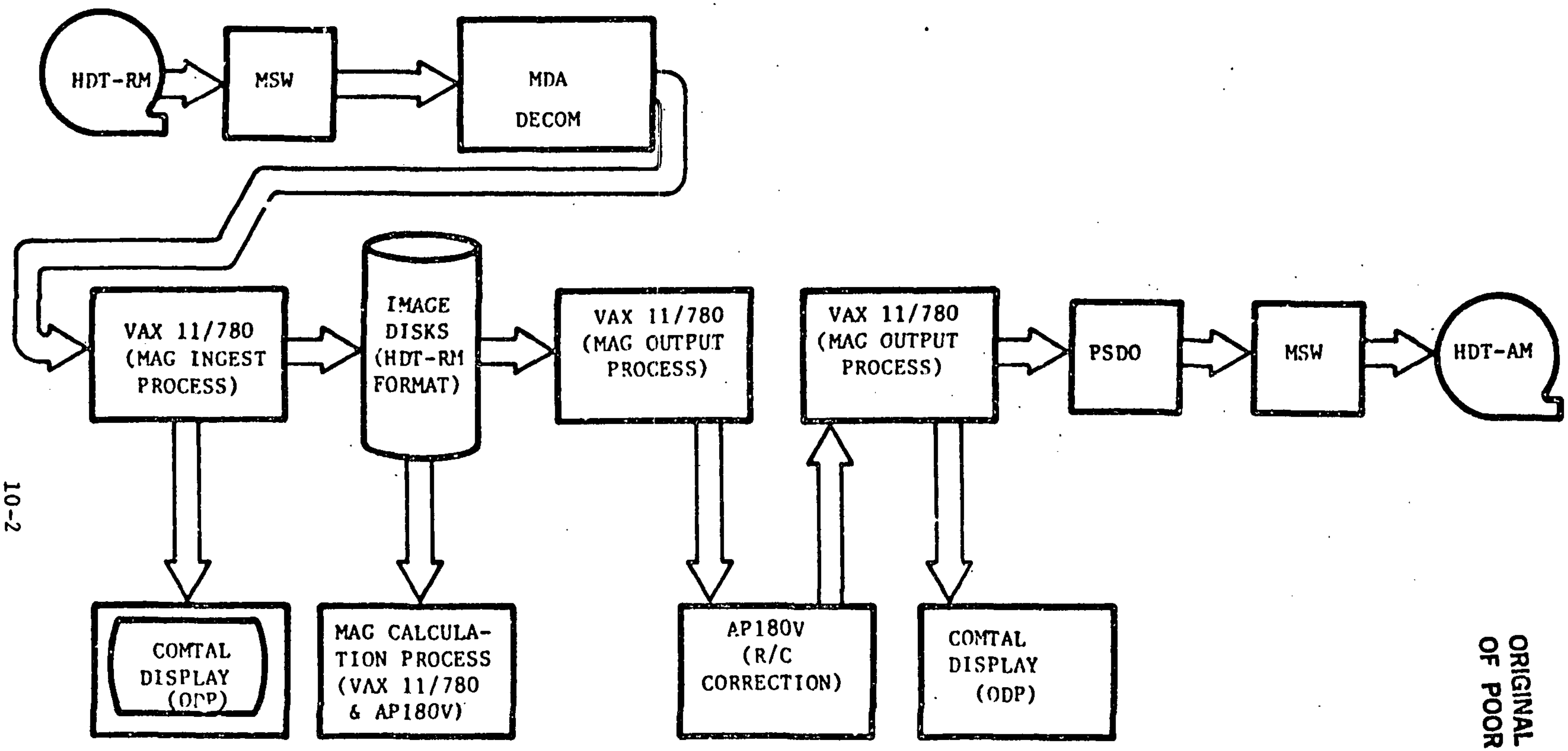
c. Quality assurance film generation

d. Manual cloud cover assessment.

10.2 OVERVIEW/BACKGROUND

10.2.1 SCOPE OF FUNCTION

The MAG function provides the capability to accept high density tapes containing



LEGEND

MSW = MATRIX SWITCH
ODP = ON-LINE DISPLAY
R/C = RADIOMETRIC CORRECTION

Figure 10-1. MAG Image Data Flow (MAG Processing)

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raw MSS data from Landsat-D (HDT-RM), and to generate partially processed image data consisting of radiometric corrections, geometric corrections and image processing related data. The processed image data are recorded on high density tapes (HDT-AM). Concurrent with the MAG process, two other functions are performed. They are manual cloud cover assessment (MCCA) and quality assurance film generation (QAFG). All processes are made possible by the MSS control and communications package (CCP).

10.2.2 PRECEDING ACTIVITIES

The Landsat-D spacecraft gathers image data which is transmitted to a ground station. The data is further transmitted to the Data Receive Record and Transmit System (DRRTS) which is located in the same computer room as MIPS. The data is recorded on a High Density Digital Recorder (HDDR) and the tape is labeled High Density Tape - Raw Data from MSS (HDT-RM). The HDTs are stored in the tape archive system (TAS) to be withdrawn as needed for processing.

The Mission Management Facility - Multispectral Scanner (MMF-M) coordinates all activities, both internal and external to the Landsat-D Ground System (GS). Whenever a requirement to process any or all of MAG arises, process requests (PR) are sent to MIPS-MAG personnel for performance.

MIPS personnel coordinate the assignment of hardware, software, PRs, ancillary tapes and HDT-RMs (from the TAS).

10.2.3 SUCCEEDING ACTIVITIES

After MAG processing has been completed, according to the PR instructions,

results are available in the form of HDT-AMs, reports, MCCA data, QAFG data, and MAG QA reports. These data are distributed, according to the PR, to assigned user organizations.

10.2.4 CONCURRENT ACTIVITIES

During MAG processing appropriate data are extracted from the processes and applied to the MCCA. This function displays MSS subsampled imagery and accepts and records operator estimates of the percentage cloud cover of each image quadrant selected. Also, data applicable to QAFG is extracted and processed. The QAFG function generates digital image data in 70 mm film format from one selectable band of all MSS world reference system (WRS) scenes processed to archival HDTs.

10.3 FUNCTION DESCRIPTION

10.3.1 MAG FUNCTIONAL DESCRIPTION

The MAG function generates partially processed data from unprocessed image data and image related data. The partially processed data consists of radiometrically, corrected image data and geometric correction data. The partially processed data is recorded on 28-track high density tapes (HDT-AM). The unprocessed data is read from 28-track high density tapes (HDT-RM).

The MAG function can be initiated either automatically, by a process request from the MMF, or manually upon request by an operator. The image processing related data is provided by the MMF with the process request or is specified by the operator with the manual process request. The manual process request is used for performing special engineering functions.

The MAG function may be partitioned into three subsets:

a. MAG control and communication functions

b. MAG data processing functions

c. MAG engineering and test functions.

Due to the concurrent activity of MAG, MCCA, and QAFG, all will be discussed in this section of the Ground Segment Operations Plan. The MAG data flow is shown in Figure 10-2.

10.3.2 MCCA FUNCTIONAL DESCRIPTION

The MCCA process is capable of manually assessing the cloud cover percentage of all MSS WRS scenes processed to archival tapes. The manual assessment will be performed only on those scenes that are scheduled for AG by the MMF. This function will display MSS subsampled imagery on a Comtal and accept and record operator estimates of the percentage of cloud cover for each image quadrant. When the MCCA process is completed, the scores will be provided to MAG and transmitted to the MMF to be included in the data base. The functional flow diagram of MCCA is shown in Figure 10-3.

The MCCA consists of the following subfunctions:

a. Operator communication

b. Generate display data

c. Display image data

d. MCCA operator terminal display

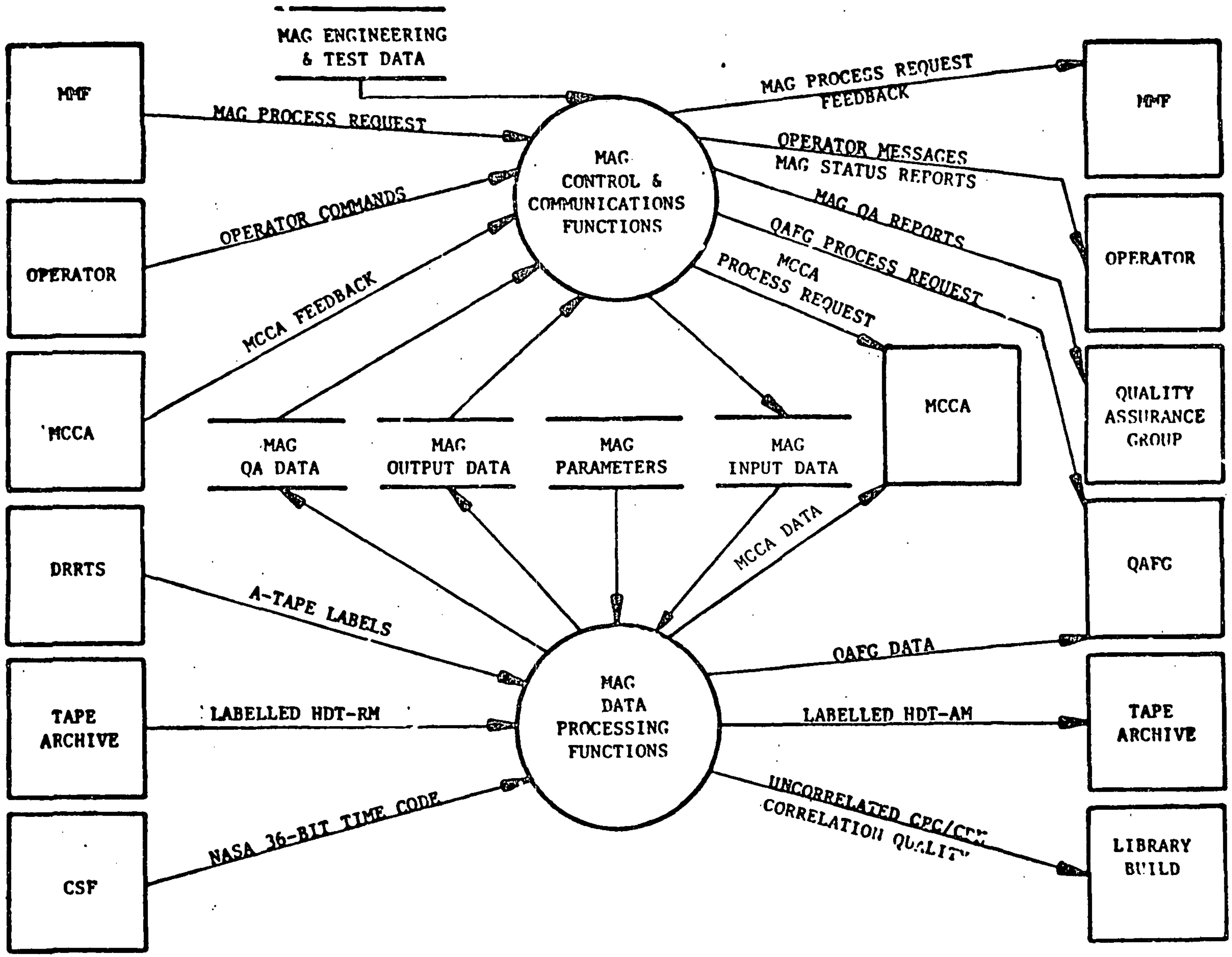

Figure 10-2. MAG Data Flow

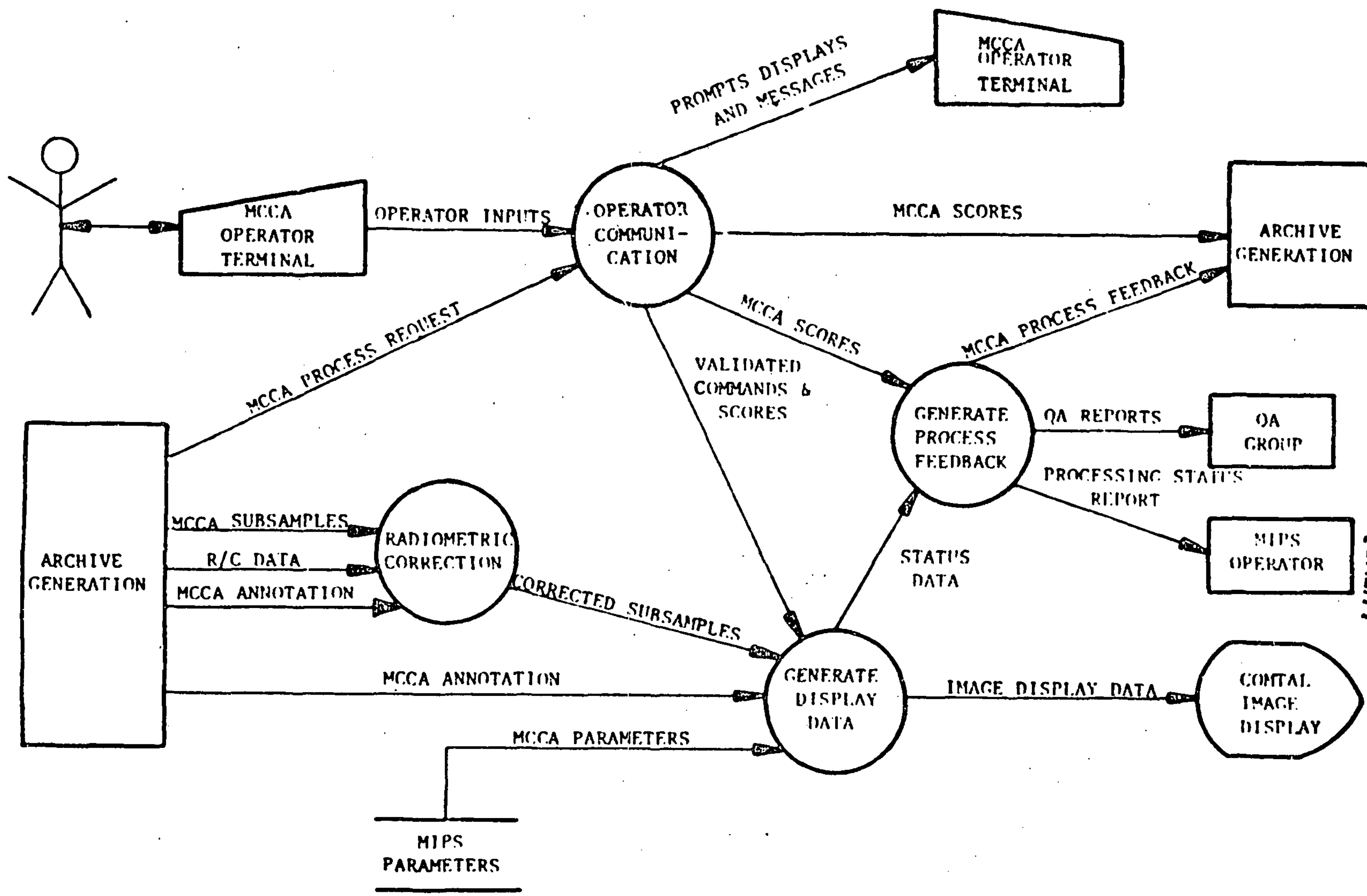

Figure 10-3. MCCA Functional Flow Diagram

e. Estimate cloud cover percentage

f. Generate process feedback.

10.3.3 QAFG FUNCTIONAL DESCRIPTION

The QAF process generates digital image data in the 70 mm film format from one selectable band of all MSS WRS scenes processed to archival HDTs.

The digital image data is radiometrically corrected first, then corrected for nominal Earth rotation, annotated, and overlaid with a grid to characterize the four quadrants that may have been cloud cover assessed. The corrected and annotated image, along with a 16-step gray scale intensity pattern, is used by the Dicomed film recorder to produce 70 mm black and white latent film masters.

The functional flow diagram of the QAF function is shown in Figure 10-4. The QAF consists of the following subfunctions:

a. Image data correction

b. Generation of film data

c. Production of film masters

d. Generate film roll feedback

e. Operator communication

f. Generate process feedback.

10.3.4 INPUTS

MAG Inputs

The external inputs required for MAG to operate normally are shown below:

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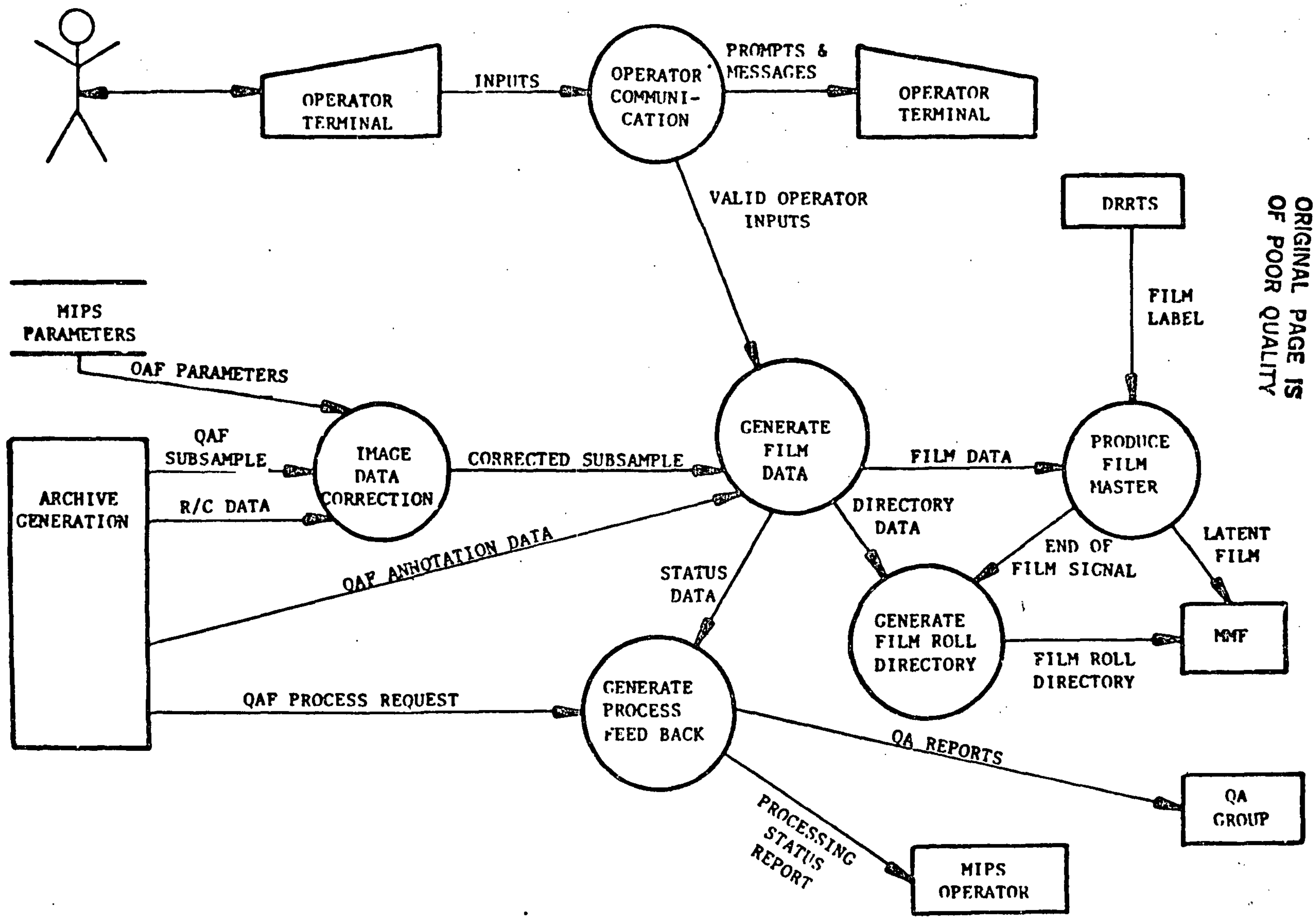

Figure 10-4. QAF Functional Flow Diagram

SOURCE	DESCRIPTION
MMF	MAG Process Requests
Tape Archive	Labelled HDT-RM
Operator	Operator Commands
MIPS Parameter File	MAG Parameters
Engineering and Test Data File	MAG Engr and Test Data
DRRTS	A-Tape Label
CSF	NASA 36-Bit Time Code
MCCA Function	MCCA Feedback

MAG Outputs

As a result of MAG processing the following are available:

DESTINATION	OUTPUT
MMF	MAG Process Request Feedback
Tape Archive	Labelled HDT-AM
Operator	Operator Messages and Reports
MCCA Function	MCCA Data, Process Request
QAFG Function	QAFG Data, Process Request
Quality Assurance Group	MAG QA Reports
Library Build	Uncorrelated CP Data

The MAG external interfaces are shown in Figure 10-5.

MCCA Inputs

In order to perform the MCCA operations the following inputs must be in place:

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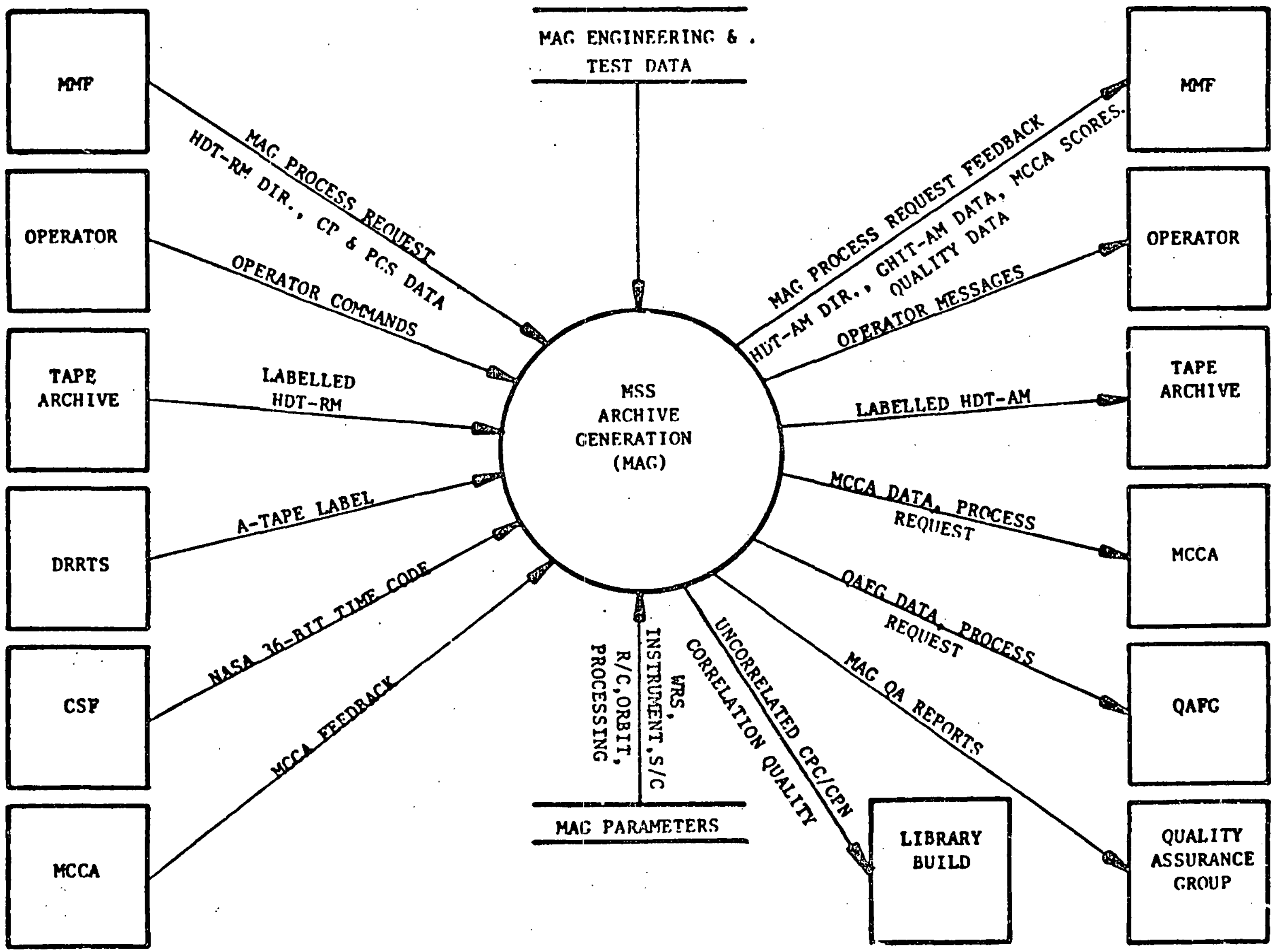

Figure 10-5. MAG External Interfaces

SOURCE	DESCRIPTION
Archive Generation	MCCA Work Orders
Archive Generation	MCCA Subsamples
Archive Generation	MCCA Annotation
Archive Generation	Radiometric Correction Data
MIPS Parameters	MCCA Parameters
MCCA Operator Terminal	Operator Inputs

MCCA Outputs

MCCA produces the following:

DESTINATION	DESCRIPTION
Archive Generation	MCCA Process Feedback
Archive Generation	MCCA Scores
MCCA Operator Terminal	Outputs to Operator
Quality Assurance Group	QA Reports
Comtal Image Display	Image Display Data
MIPS Operator	Processing Status Report

The MCCA external interfaces are shown in Figure 10-6.

QAFG Inputs

QAF input requirements are:

SOURCE	DESCRIPTION
Archive Generation	QAF Work Orders
Archive Generation	R/C Data
Archive Generation	QAF Annotation Data

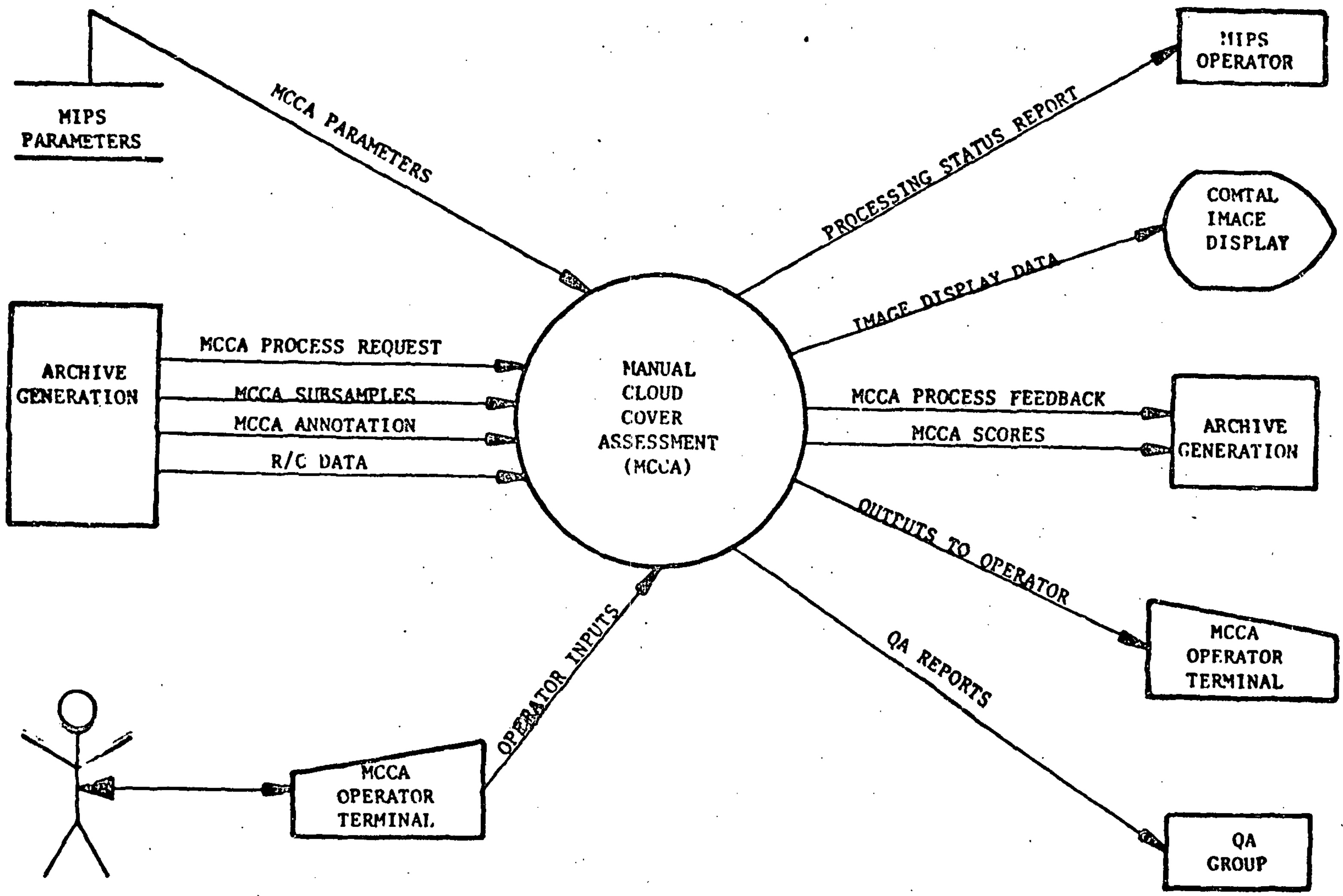

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Figure 10-6. MCCA Interface Diagram

Archive Generation	QAF Subsamples
MIPS Parameters	QAF Parameters
DRRTS	Film Label
Operator Terminal	Operator Inputs

QAF Outputs

Outputs from QAFG activity are:

DESTINATION	DESCRIPTION
Archive Generation	QAF Process Feedback
MMF	QAF Latent Film
MMF	Film Roll Feedback
MIPS Operator	Processing Status Report
QA Group	QA Reports
Operator Terminal	Outputs to Operator

External interface relationships for QAFG are shown in Figure 10-7.

10.3.5 HARDWARE/SOFTWARE SUMMARY

The MAG, MCCA and QAFG requirements are supported by a complement of hardware and software, synthesized to enable Landsat-D program objectives to be met and necessary throughput to be attained.

The MIPS consists of three nearly identical image data processing strings, which are each comprised of the following major hardware elements:

a. VAX 11/780 computer system

b. AP-180V Array Processor

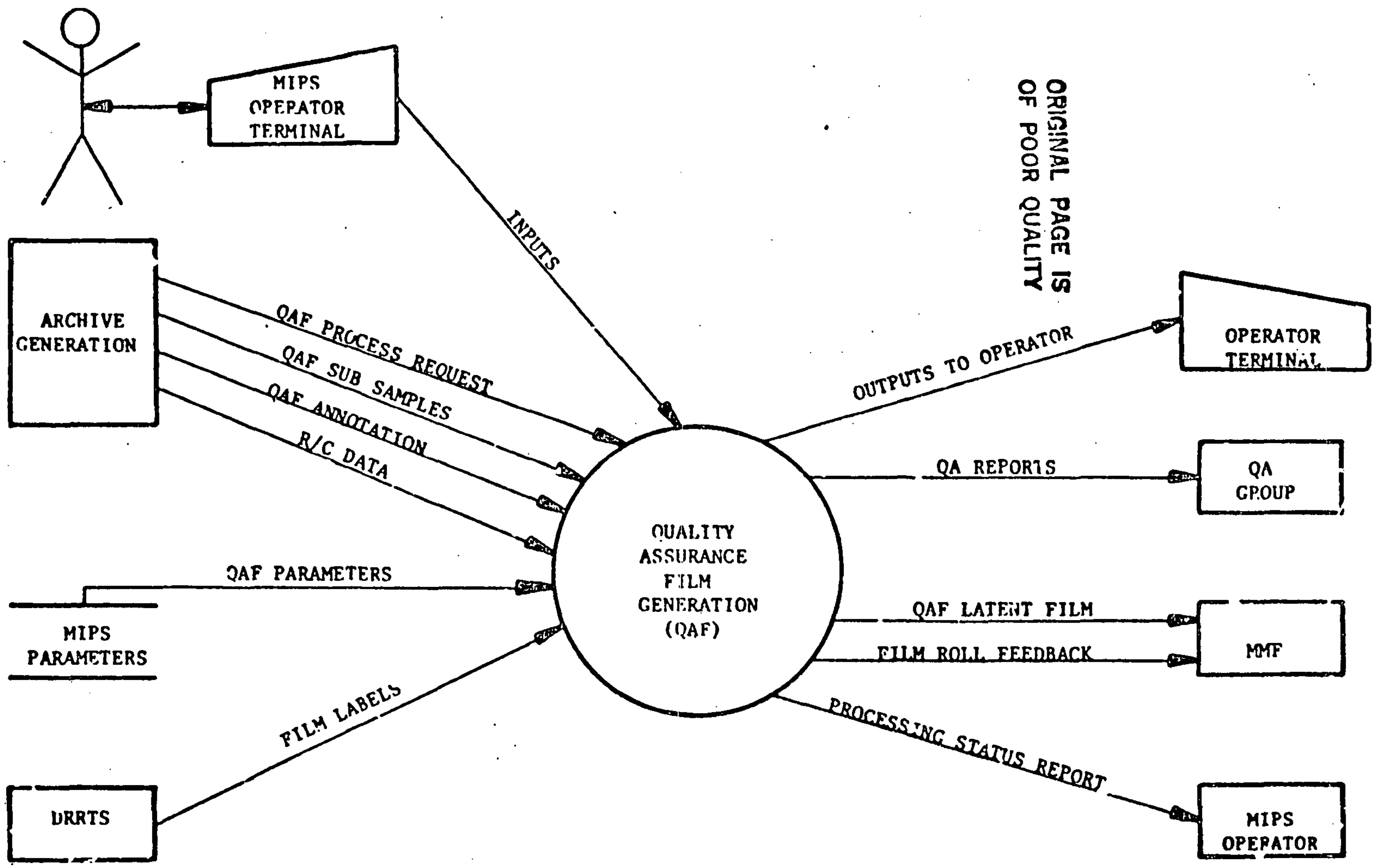

Figure 10-7. QAF Interface Diagram

c. Moving Window Display (only 1)

d. Decommutator

e. Serial to Parallel Data Input (SPDI) Formatter

f. Parallel to Serial Data Output (PSDO) Formatter

g. IGF Tape Control (ITC)

h. 28-Track High Density Digital Recorder (HDDR)

i. Comtal Display (2)

j. Dicomed 70 mm Film Recorder

k. Zoom Transfer Scope (ZTS) (only 1)

l. Digitizer (only 1).

Software support consists of:

a. System software

b. Device drivers

c. Utility software

d. Process packages.

The first three categories are transparent to process operations. Those programs unique to MAG, MCCA and QAFG are listed below.

a. MSS Archive Generation (MAG)

1. MCON - MAG Control Process

2. MING - MAG Ingest Spooler Subprocess

3. MDEX - MAG Data Extraction Subprocess

4. MGCD - MAG Geometric Correction Data Subprocess Generation

5. MHDG - MAG HAAT Data Generation Subprocess

6. MOUT - MAG Output Spooler Subprocess

b. Manual Cloud Cover Assessment (MCCA)

1. MCCA - Manual Cloud Cover Assessment Process

c. Quality Assurance Film Generation (QAFG)

1. QFMONITOR - QF Monitor Process

2. QFFILM - QF Film Write Process

10.4 PROCESS OPERATIONS

As noted, this section considers MAG, MCCA and QAFG processes as one concurrent activity, but capable of being run independently. A typical process will be discussed with interactive and interface elements highlighted. Samples of detailed procedures are shown to aid in understanding the step by step process necessary to effect a smooth MAG data flow. Operator activities and timing constraints are shown to complete the plan. A summary paragraph relating to contingency operations and error recovery is provided for guidance in the preparation of contingency operations procedures.

Design traceability for the MAG, MCCA and QAFG functions is shown in Figure 10-8, the applicable specification tree.

To set some bounds for the following discussions, some timing requirements are given here.

Processing Time Allocation

The MIPS functions are allocated time as shown in Table 10-1. The model assumes that 200 new, as distinguished from rework, MSS scenes distributed on nine HDT-

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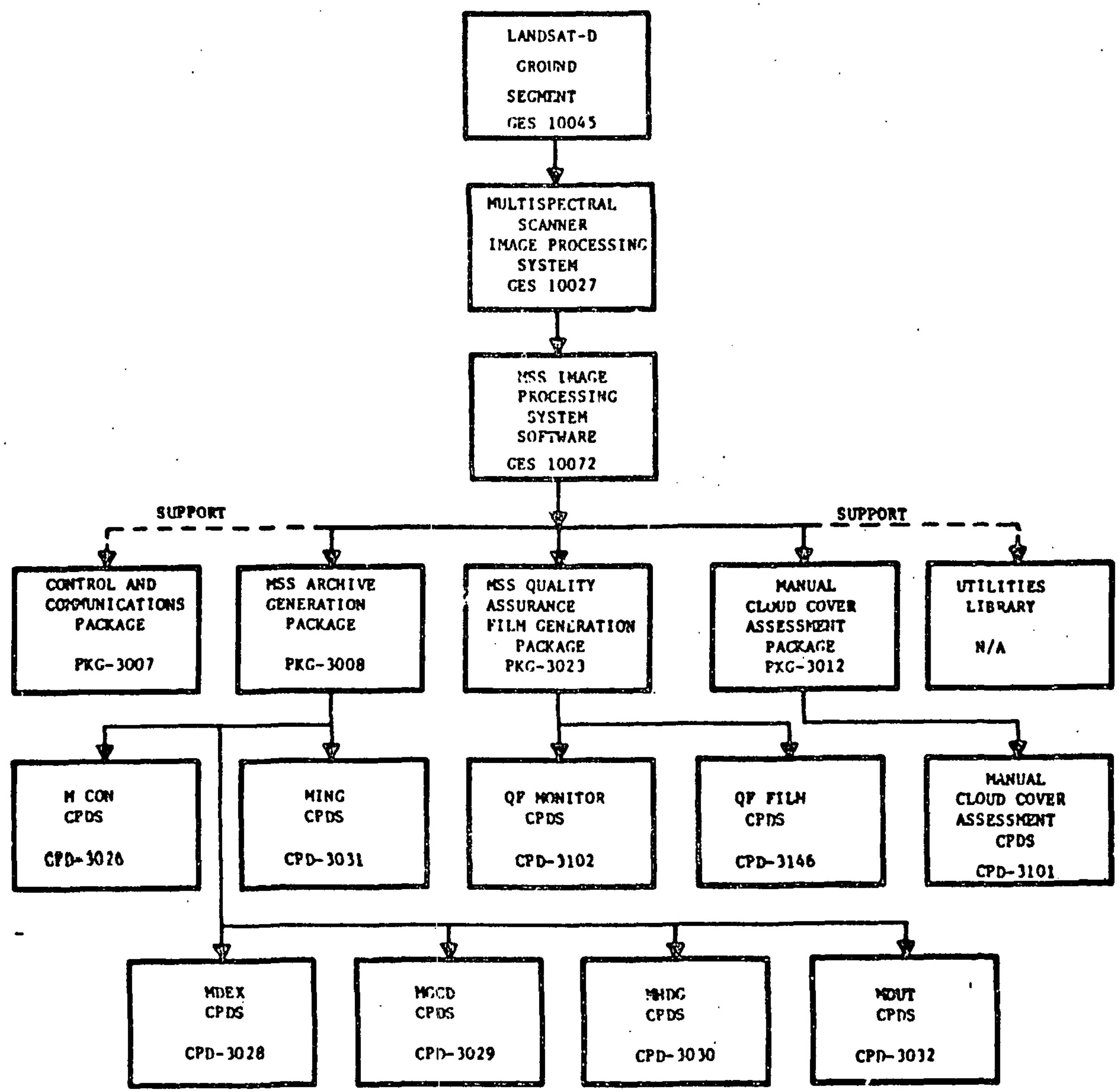

Figure 10-8. MAG, MCCA, QAFG Specification Tree

RMs are input to the MIPS daily. Each of these HDT-RMs contains less than a MIPS string image disk capacity of 35 scenes.

Table 10-1. Processing Time Allocation for the MIPS Functions

MIPS MAJOR FUNCTION	PROCESSING TIME ALLOCATION (COMPUTER STRING HOURS)
Archive Generation	27.4 hours
MCCA	3.7 hours
QAFG	5.5 hours

The specific loading for each of the MIPS functions is delineated in the following paragraphs. It should be noted that this processing load is considered typical and that a different product mix for any given processing day would result in a somewhat different processing time allocation for the MIPS functions.

1. Archive Generation

   A total processing load of 220 scenes is processed by MSS archive generation; 200 newly acquired and 20 rework. Each newly acquired HDT-RM is processed to a single HDT-AM. The rework scenes are randomly distributed on nine HDT-RMs and are processed multiple HDT-RM to HDT-AM. Thus, the input and output to archive generation is 18 HDT-RM and 10 HDT-AM.

2. MCCA

   Manual cloud cover assessment of the 220 scenes is performed concurrently with archive generation.

3. QAF

Quality assurance film generation of the 220 scenes, one image per scene, is performed concurrently with archive generation.

Initial Archive Generation

This paragraph describes the initial generation of the archival product (HDT-AM) from a single HDT-RM. One HDT-RM to one HDT-AM is the normal MIPS operational scenario for the initial generation of the archival product. Multiple HDT-RMs which cumulatively contain less than the image disk capacity will be written to a single HDT-AM. Included in this scenario is the generation of QA (70 mm) film and MCCA. The operational scenario is depicted in the data flow diagram, Figure 10-9. The following describes each function:

1. MMF generates a move order for an HDT-RM to be transferred from the tape archive to MIPS. The tape archive operator performs the move operation and logs it into MIPS.
2. MMF generates an AG process request for the HDT-RM for transfer to MIPS.
3. MIPS transfers the process request and places it in queue with other process requests. The operator may reorder the queue at his option.
4. When the AG process request for the HDT-RM reaches the front of the queue, MIPS will issue an HDT mount request.
5. The MIPS operator mounts and positions the HDT-RM in response to the HDT mount request, and informs the MIPS string that the HDT mount is complete.
6. MIPS starts playback of the HDT-RM and ingests all of the desired

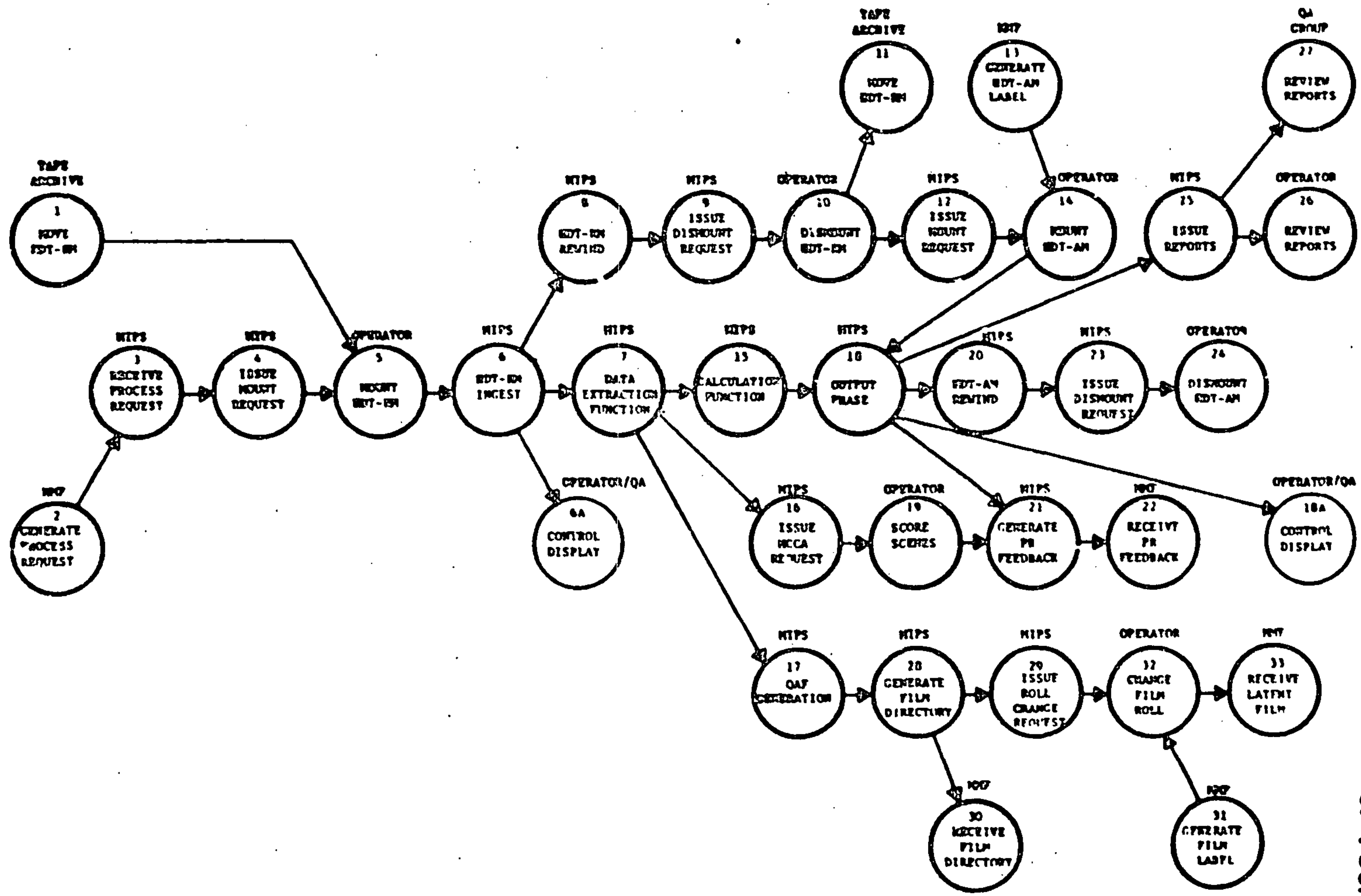

Figure 10-9. Initial Archive Generation Operational Scenario

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images up to the image disk capacity (approximately 35 scenes). If the number of scenes contained on the HDT-RM exceeds the disk capacity, the scenes which MIPS is unable to ingest will receive an appropriate status code in the process request feedback. When the MMF receives the feedback a new process request for the unprocessed scenes will be generated. The HDDR playback data rates are:

a. Playback desired data at 1/4 real-time (RT).

b. Undesired data is skipped at 1/4 RT, 4 RT or 300 IPS, dependent on length of tape to be skipped.

After completion of the data ingest phase, MIPS will initiate the data extraction function and HDT-RM rewind.

6a. The MIPS operator or a QA person will monitor the ingested data on the Comtal display. One operator selectable band is displayed during the ingest phase.

7. MIPS extracts data required for HAAT generation, radiometric correction, QAF and MCCA. Upon completion of the data extraction function of the calculation phase, MIPS will:

a. Initiate the calculation functions of the calculation phase.

b. Initiate QAF generation.

c. Issue an MCCA request to the operator.

NOTE: Functions 8, 9, 10,12, 13 and 14 will be performed in parallel with functions 7 and 15 and will be complete prior to the completion of function 15. Function 11 is shown at this point for clarity, but will not be initiated until after MMF receives the AG process request feedback.

8. The HDT-RM is rewound at 300 IPS.
9. MIPS issues an HDT dismount request to the operator.
10. The MIPS operator dismounts the HDT-RM in response to the HDT dismount request. He then informs the MIPS string that the HDT dismount is complete.
11. The MIPS operator logs out the HDT-RM and MMF generates a move order for the HDT-RM to be transferred from MIPS to the tape archive (see above note). The tape archive operator performs the move operation.
12. MIPS issues an HDT mount request for a blank tape to be mounted.
13. The MIPS operator requests an HDT-AM label from MMF and receives the next sequential label. He then inputs the HDT indentification to the MIPS string via a terminal.
14. After attaching the HDT-AM label to a blank HDT, the MIPS operator mounts and positions the HDT. He then informs the MIPS string that the HDT mount is complete.
15. MIPS performs the calculation functions of the calculation phase. During this phase, control point chips and control point neighborhoods which fail to correlate will be saved, along with the directory information and the rejection code, in a file. This file will be written to CCT upon operator command.
16. MIPS issues a request to the operator to perform cloud cover assessment of the scenes ingested from the HDT-RM.
17. MIPS generates the latent QA film.

18. Output phase - MIPS radiometrically corrects and writes the image data and the HAAT data to the HDT-AM. The HDT-AM directory is also generated during this phase.

18a. The MIPS operator or a QA person will monitor the radiometrically corrected image data on a Comtal display.

19. The MIPS operator initiates MCCA and scores the scenes ingested from HDT-RM #XYZRM. This function may be initiated at any time after issuance of the MCCA request.

20. The HDT-AM is rewound at 300 IPS.

21. Upon completion of the output phase and MCCA, MIPS generates the AG process request feedback.

22. MIPS transfers the process request feedback file, QA files, HDT-AM directory and GHIT data to the MMF.

23. MIPS issues an HDT dismount request to the operator.

24. The MIPS operator dismounts the HDT-AM in response to the HDT dismount request and informs the MIPS string that the HDT dismount is complete. NOTE: At this point the MIPS string is ready to start the next process request.

25. Upon completion of the output phase, MIPS outputs hard copy reports to the operator including:

    a. Process Summary Report

    b. QA Data Summary

    c. Operator Log (if requested)

26. The MIPS operator reviews the reports to evaluate system performance. A copy of this report is also delivered to the QA group.

27. The QA group will review the reports to determine the PEPG scene and tape dump requirements.

28. MIPS generates a QA film directory either at the end of film or on operator command to dismount the film roll.

29. MIPS issues a roll change request to the operator.

30. MIPS transfers the film roll directory to MMF. MMF generates a request for photo lab processing.

31. The MIPS operator requests a QAF label from MMF and receives the next sequential label. He then inputs the roll identification to the MIPS string via a terminal and attaches the label to a fresh roll of film.

32. The MIPS operator removes the film roll from the Dicomed and mounts the fresh roll of film.

33. The MIPS operator delivers the latent film to the MMF shipping area to be sent to the photo lab.

10.4.1 MSS ARCHIVE GENERATION (MAG)

The objective of MAG is to process HDT-RMs through a variety of subprocesses to HDT-AMs. Since this process is very long, two segments have been selected to use as examples in this document. They are the first 14 steps of the initialization sequence, and a section of the sequence showing work orders in finished state for MCCA, and work orders in completed state for QAF.

Minimum hardware to support MAG is listed below:

a. VAX 11/780

b. 6 RP06 Disk Drives

c. Line Printer

d. 1 VT100 Terminal

e. 1 LA36 Terminal

f. 1 28 Track High Density Recorder

g. Time Code Translator

h. PSDO

i. Tape Search Unit

j. Frequency Synthesizer

k. MDA Decommutator

l. 1 Comtal Image Display

m. Matrix Switch

n. FPS AP180V

o. SPDI

Feedback is required to MMF for all process requests. An example of the archive generation feedback scene record is included for illustration. It contains MCCA feedback information.

Scene Record Feedback

There will be one scene record for each scene requested for processing on the process request. These records, which appear immediately following the corresponding HDT-R interval record, include scene identification, bands available, cloud cover assessments and image quality assessments (reference Table 10-2).

Table 10-2. Archive Generation Process Request Feedback File Scene Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4	F B S C	RECORD TYPE - FBSC
5-16	M S P P P R R R D D D D	INTERNAL SCENE IDENTIFICATION MSPPPRRRDDDD M = MISSION NUMBER - 4 = LANDSAT-D, 5 = LANDSAT-D PRIME S = SENSOR TYPE 'M' = MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH (0001-9999)
17-26	M D D D D H H M M T	NASA SCENE IDENTIFICATION MDDDDHHMMT M = MISSION NUMBER 4 = LANDSAT-D, 5 = LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH (0001-9999) HH = HOURS MM = MINUTES T = TENS OF SECONDS
27-42	A_1 A_1 A_2 A_2 A_3 A_3 A_4 A_4	QUADRANT CLOUD COVER ASSESSMENT $A_N A_N$ = TENS OF PERCENT OF CLOUD COVER MANUALLY ASSESSED FOR QUADRANT N

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Table 10-2. Archive Generation Process Request Feedback File Scene Record (2 of 3)

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BYTES	DATA	DESCRIPTION
35-40	I P S X X X	SCENE ERROR CODE:IPSXXX XXX = SEQUENCE NUMBER REFERENCE APPENDIX A
41-49	1 2 3 4 b̸ b̸ b̸ b̸ b̸	BANDS AVAILABLE - SET TO ZERO WHEN NOT AVAILABLE BYTES 45-49 ARE BLANK FILLED FOR SOFTWARE CONSISTENCY
50-53	B M G Q	<u>BAND DATA</u> - BLANK IF BAND IS ABSENT B = BAND NUMBER M = MODE 'L' = LINEAR 'C' = COMPRESSED G = GAIN 'H' = HIGH 'L' = LOW Q = QUALITY (0-9 WHERE 9 IS HIGHEST)
54-65		BAND DATA FOR BANDS 2-4 IN THE FORMAT OF BYTES
66-80	M S P P P R R R B T X X Y Y Y	CONTROL POINT DATA (MAXIMUM 20 CONTROL POINTS)* CONTROL POINT 1 IDENTIFIER M = MISSION 2 = LANDSAT 2 3 = LANDSAT 3 4 = LANDSAT D 5 = LANDSAT D' M = MSS S = SENSOR PPP = PATH RRR = ROW B = BAND 1-4 T = TYPE G = GCP S = SCP R = RCP L = LS 2/3 XX = ZONE 01-25 YYY = SEQUENCE WITHIN SCENE

Table 10-2. Archive Generation Process Request Feedback
File Scene Record (3 of 3)

BYTES	DATA	DESCRIPTION
81	F	SUCCESS FLAG-CP 1 N = NOT ATTEMPTED S = SUCCESSFUL C = FAILED TO CORRELATE F = REJECTED BY FILLER O = CP OUTSIDE SCENE E = CP ON EDGE OF NEIGHBORHOOD
82-85	. X X X	BLANK FILL. RESERVED FOR CORRELATION PEAK VALUE CP1 .000 - .999
86-89	. X X X	BLANK FILL. RESERVED FOR CP1 PEAK MINIMUM CURVATURE .000 - .999
90-93	X X . X	BLANK FILL. RESERVED FOR ALONG TRACK RESIDUAL CP1 00.0 - 99.9
94-97	X X . X	BLANK FILL RESERVED FOR CROSS TRACK RESIDUAL CP1 00.0 - 99.9
98-705		CONTROL POINT INFORMATION FOR POINTS 2 THROUGH 20 IN SAME FORMAT AS BYTES 66-97.

* THESE FIELDS REPORT ON THE PERFORMANCE OF THE CONTROL POINTS USED IN ARCHIVE GENERATION. IF FEWER THAN 20 CONTROL POINTS WERE AVAILABLE IN THE PROCESS REQUEST THE EXCESS FIELDS SPECIFIED ABOVE WILL BE BLANK FILLED.

When the scene data is not successfully processed, an error code will be returned by the MIPS identifying the type of error encountered.

Procedural examples are given below.

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
1	LOG INTO THE MIPS OPERATIONAL ACCOUNT AT THE MAIN TERMINAL.	MIPS MAIN MENU IS DISPLAYED. MIPS PROMPTS, "FUNCTION"	FIGURE 10-10
2	TYPE "INIT<CR>"	STRING IS INITIALIZED, THE MESSAGE INDICATING THE PROCESS ID OF THE PCE IS PRINTED AND MIPS REPROMPTS, "FUNCTION".	
3	TYPE "CA<CR>"	MIPS DISPLAYS CAPABILITIES MENU AND PROMPTS, "CAPABILITIES:"	FIGURE 10-11
4	TYPE "SH<CR>"	MIPS DISPLAYS STRING CAPABILITIES AND REPROMPTS, "CAPABILITIES:"	FIGURE 10-12
5	TYPE "EX<CR>"	MIPS RETURNS TO THE MAIN STRING MENU AND PROMPTS, "FUNCTION"	
6	TYPE "CH<CR>"	MIPS DISPLAYS STRING CHARACTERISTICS AND PROMPTS, "PACKAGE OPERATION"	FIGURE 10-13
7	TYPE "SH<CR>"	CURRENT PACKAGE SETTINGS ARE DISPLAYED AND MIPS REPROMPTS, "PACKAGE OPERATION:".	FIGURE 10-14
8	TYPE "EX<CR>"	MIPS RETURNS TO MAIN CONTROL MENU AND PROMPTS "FUNCTION".	
9	TYPE "ALLOC<CR>"	MIPS TYPES IMAGE DISK ALLOCATION DISPLAY AND PROMPTS "DSK:ENTER (ALL OR PKG NAME):"	
10	TYPE "ALL<CR>"	CURRENT DISK ALLOCATIONS FOR ALL MIPS PACKAGES ARE DISPLAYED MIPS RETURNS TO MAIN CONTROL LEVEL AND PROMPTS, "FUNCTION".	

```
****************************** MIPS COMMAND MENU ******************************
*                                                                             *
*  IN(IT)   String Initialization         AT(TN)   Attention Utility          *
*  AL(LOC)  Show Disk Allocation          OD(F)    On-Line Display Utility    *
*  CH(AR)   Set Package Characteristics   CO(MD)   COMTAL Display Utility     *
*  CA(PS)   Set String Capabilities       ID(UMP)  Interactive Dump Util.     *
*                                         FM(OUNT) 70mm Film Mount Utility    *
*  MA(G)    MSS Archive Generation                                            *
*  MC(CA)   Manual Cloud Cover Assessment DM(U)    Queue Manipulation         *
*  QA(F)    Quality Assurance Film Gen.   MI(N)    MMF Input Process          *
*                                                                             *
*  PE(PG)   Perf. Eval. Product Gen.      EP(IC)   Engineering PR Creation    *
*                                         ST(AT)   Package Status Display     *
*                                                                             *
*  DI(G)    Map Digitizing                HE(LP)   Redisplay this Menu        *
*  CP(GEN)  Control Point Generation      EX(IT)   Exit String Control        *
*  FA(IL)   Control Point Failure Display                                     *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*******************************************************************************
Function!
```

Figure 10-10. MIPS Command Menu

```
***************************** SET CAPABILITIES MENU *****************************
*       AL(L)  Process ALL capabilities                                           *
*       NO(NE) Do not process any capabilities                                    *
*                                                                                 *
*       AG     Process MSS archive generation process requests                    *
*       NAG    Do not process MSS archive generation process requests             *
*                                                                                 *
*       LB     Process control point library build.                               *
*       NLB    Do not process control point library build.                        *
*                                                                                 *
*       FP     Process file product generation process requests                   *
*       NFP    Do not process file product generation process requests            *
*                                                                                 *
*       TP     Process CCT product generation process requests                    *
*       NTP    Do not process CCT product generation process requests             *
*                                                                                 *
*       DR     Process HDT dump/report                                            *
*       NDR    Do not process HDT dump/report                                     *
*                                                                                 *
*       SH(OW) Show current capabilities                                          *
*       EX(IT) Exit to the string control menu                                    *
*       HE(LP) Display this menu                                                  *
***********************************************************************************
CAPABILITIES:
```

Figure 10-11. Set Capabilities Menu

```
String capabilities:
    Process MSS archive generation process requests.
    Process control point library build.
    Process file product generation process requests.
    Process product generation process requests .
    Process HDT dump/report.
```

Figure 10-12. String Capabilities

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```
*********************** SET PACKAGE CHARACTERISTICS MENU ***********************
*                                                                              *
*       EN          Enable MOU package autostart                               *
*       DIS         Disable MOU package autostart                              *
*       POL         Set time polling value for MIN package autostart           *
*       PEP(P)/(T)  Set PEPG lifespan to PERMANENT or TEMPORARY                *
*       PEP(E)/(D)  Enable or Disable PEPG singlecycle                         *
*       MAG(P)/(T)  Set MAG lifespan to PERMANENT or TEMPORARY                 *
*       MAG(E)/(D)  Enable or Disable MAG singlecycle                          *
*       MCA(P)/(T)  Set MCCA lifespan to PERMANENT or TEMPORARY                *
*       MCA(E)/(D)  Enable or Disable MCCA singlecycle                         *
*       QAF(P)/(T)  Set QAF lifespan to PERMANENT or TEMPORARY                 *
*       QAF(E)/(D)  Enable or Disable QAF singlecycle                          *
*       CPG(P)/(T)  Set CPG lifespan to PERMANENT or TEMPORARY                 *
*       CPG(E)/(D)  Enable or Disable CPG singlecycle                          *
*       ALL(P)/(T)  Set ALL package lifespans to PERMANENT or TEMPORARY        *
*       ALL(E)/(D)  Enable or Disable ALL singlecycle                          *
*       SH          Show current package settings                              *
*                                                                              *
*       HE(LP)   Display this menu                                             *
*       EX(IT)   Exit to string control menu                                   *
*                                                                              *
********************************************************************************
PACKAGE OPERATION:
```

Figure 10-13. Set Package Characteristics Menu

```
MIN POLLING EVERY 0 MINUTES
MOU AUTOSTART ON

PKG     LIFESPAN     SINGLE CYCLE
---     --------     ------------
MAG       TEMP           OFF
MCA       TEMP           OFF
OAF       TEMP           OFF
PEP       TEMP           OFF
CPG       TEMP           OFF
```

Figure 10-14. Package Operation Display

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
11	TYPE "ATTN CCP ALLOC MAG DISKAAAAAAAAAAAAA<CR>"	ATTENTION SAYS MESSAGE WAS RECEIVED AND SPECIFIED IMAGE DISK IS ALLOCATED TO MAG	
12	TYPE "ATTN CCP ALLOC MAG DISKCCCCCCCCCCCCC<CR>"	ATTENTION SAYS MESSAGE WAS RECEIVED AND SPECIFIED IMAGE DISK IS ALLOCATED TO MAG	
13	TYPE "ATTN CCP ALLOC MAG DISKBBBBBBBBBBBBB<CR>"	ATTENTION SAYS MESSAGE WAS RECEIVED AND SPECIFIED IMAGE DISK IS ALLOCATED TO MAG	
14	TYPE "ATTN CCP ALLOC PEP PEPGAAAAAAAAAAAAA<CR>"	ATTENTION SAYS MESSAGE WAS RECEIVED AND SPECIFIED IMAGE DISK IS ALLOCATED TO PEPG	
204	TYPE "MAG<CR>"	MIPS DISPLAYS MAG STATUS AND REPROMPTS, "STATUS>"	FIGURE 10-15
205	TYPE "EX<CR>"	CONTROL RETURNS TO MAIN COMMAND LEVEL AND MIPS PROMPTS, "FUNCTION:". INGEST COMPLETES AND HCS SENDS A TAPE DISMOUNT MESSAGE TO LAO:	
206	TYPE "ATTN MAG PAUSE"	WHEN OUTPUT PHASE INITIATED	
207	MOUNT AN HDT-AM		
208	TYPE "ATTN NCS	MOUNT HDT-AM FOR MP813020001 L4MHA8130303<CR>"	AND MIP813030001
209	TYPE "DMS"	SET UP MATRIX SWITCH WORK AROUND	
210	TYPE "R MSEXER"	RUN MATRIX SWITCH EXERCISER	
211	TYPE "DV MSAO:"	SPECIFY DEVICE ID	
212	TYPE "SW 6,2"	SWITCH PSDO TO CHANNEL 2	
213	TYPE "SW 6,3"	SWITCH PSDO TO CHANNEL 3	

```
STRING:  MIPS1             MAG PACKAGE STATUS DISPLAY             DATE:29-OCT-1981
                                                                  TIME:20:47:48.01

                        INGEST PHASE(MING)           $INACTIVE$
                        ------------------
                                                       # OF INTERVALS=   1
       START TIME= 20:27:45.95                       CURRENT INTERVAL=   1
        STOP TIME= 20:33:31.23                   INTERVAL IRIG START= 2641502573
        HDT_RM_ID= L4MHR8126401                   INTERVAL IRIG STOP= 2641505080
    WORK ORDER ID= MIP813040001MAG01              # OF ECC OVERFLOWS=       3

                        CALCULATION PHASE(MHDG)       $ACTIVE$
                        ----------------------
       START TIME= 20:47:44.68                     TOTAL # OF SCENES=   1
        STOP TIME=                                     CURRENT SCENE=   1
    WORK ORDER ID= MIP813040001MAG01               CURRENT SCENE ID= 4M0070300264

                           OUTPUT PHASE(MOUT)           $INACTIVE$
                           -----------------
        HDT-AM ID= L4MHA8130302
       START TIME= 19:56:23.30                         CURRENT SCENE=   1
        STOP TIME= 19:59:40.10                     CURRENT SCENE ID= 4M0070300264
TOTAL # OF SCENES=   1                            # OF ECC OVERFLOWS=
```

Figure 10-15. MAG Package Status Display

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
214	TYPE "SW 6,4"	SWITCH PSDO TO CHANNEL 4	
215	TYPE "SW 6,5"	SWITCH PSDO TO CHANNEL 5	
216	TYPE "SW 1,6"	SWITCH HDDR TO SPDI	
217	TYPE "EX"	EXIT EXERCISER	
218	TYPE "ATTN MAG RESUME"	MAG RESUMES	
219	TYPE "FM<CR>"	DISMOUNT FILM ROLL. FMOUNT PROMPTS"	
220	TYPE "YES<CR>"	FMOUNT WRITES AN END OF FILM ROLL FRAME AND PRODUCES A FEEDBACK DIRECTORY FOR THE CCP. FMOUNT THEN REPROMPTS, "FM>"	
221	TYPE "\EX<CR>"	FMOUNT EXITS THE SYSTEM AND MIPS REPROMPTS, "FUNCTION:"	
222	TYPE "DMU<CR>"	DMU IS ACTIVATED AND ITS MENU IS DISPLAYED. DMU PROMPTS, "DMU>"	FIGURE 10-16
223	TYPE "WOTO<CR>"	WORKORDER TOTALS, FOR ALL PACKAGES, ARE DISPLAYED. DMU REPROMPTS, "DMU>"	FIGURE 10-17
224	TYPE "READ MAG<CR>"	DMU DISPLAYS MAG WORK ORDERS IN THE READY STATE AND REPROMPTS, "DMU>"	FIGURE 10-18
225	TYPE "HSET<CR>"	DMU PROMPTS, "DMU-"ENTER LINE NUMBER (1 TO 3) DIGITS:"	
226	TYPE "1<CR>"	DMU MOVES THE WORKORDER TO THE HOLD QUEUE AND PROMPTS, "DMU>"	
227	TYPE "HOLD MAG<CR>"	DMU DISPLAYS MAG WORKORDERS IN HOLD STATE AND REPROMPTS, "DMU>"	FIGURE 10-19

```
STRING: MIPS1              DMU COMMAND SUMMARY              DATE:30-OCT-1981
                                                            TIME:04:52:23.99

ENTER THIS..                     TO DO THIS...
------------    ------------------------------------------------------------
DISP    . . . . . . . SELECT A DMU DISPLAY
EXIT    . . . . . . . EXIT THE DMU SESSION
HELP    . . . . . . . DISPLAY THIS MENU
PWOR    . . . . . . . CHANGE THE (P)RIORITY OF A GIVEN (W)ORK (OR)DER
WCOM    . . . . . . . ATTACH A (COM)MENT TO A WORK ORDER
POSI    . . . . . . . CHANGE THE SCHEDULING (POSI)TION FOR ONE WORK ORDER
RWOR    . . . . . . . (R)EWORK A (W)ORK (OR)DER
RQUE    . . . . . . . (R)ESEQUENCE THE ENTIRE SCHEDULING (QUE)UE
FLPR    . . . . . . . (FL)USH A (P)ROCESS (R)EQUEST
FWOR    . . . . . . . (F)LUSH A (W)ORK (OR)DER
RSET    . . . . . . . (SET) WORK ORDER TO (R)EADY STATE
CSET    . . . . . . . (SET) WORK ORDER TO (C)OMPLETE STATE
HSET    . . . . . . . (SET) WORK ORDER TO (H)OLD STATE
SBOU    . . . . . . . (S)ET A-TAPE (BOU)NDARY
CBOU    . . . . . . . (C)LEAR A-TAPE (BOU)NDARY
```

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Figure 10-16. DMU Command Summary

STRING: MIPS1 WORK ORDER SUMMARY DATE:30-OCT-1981
TIME:04:53:28.90

LINE	PACKAGE	WORK ORDERS READY	PARTIAL	HOLD	COMPLETE	FINISHED
1	MAG	1	2	0	0	2
2	MCA	2	0	0	0	1
3	QAF	2	0	0	1	0
4	PEP	0	0	0	0	0
5	CPG	0	0	0	0	0

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Figure 10-17. Work Order Summary

```
STRING: MIPS1          WORK ORDERS IN READY    STATE            DATE:30-OCT-1981
                                FOR MAG PACKAGE                  TIME:04:54:04.08

LINE   PRI  SEQ.     WORK ORDER ID     SOURCE HDT     SCENES   STATUS   ATTEMPTS
----   ---  -----  ----------------- ------------- ------   ------   --------
  1     30  0040   MIP813040001MAG01 L4MHR8126401    005    IPS103        01
```


Figure 10-18. MAG Work Orders Ready Display

```
STRING:  MIPS1          WORK ORDERS IN HOLD     STATE            DATE:30-OCT-1981
                                 FOR MAG PACKAGE                  TIME:04:54:42.24

LINE   PRI  SEQ.     WORK ORDER ID      SOURCE HDT    SCENES   STATUS   ATTEMPTS
----   ---  -----  ---------------  ------------  ------   ------   --------
  1     30  0010   MIP813040001MAG01 L4MHR8126401   005     IPS103         01
```


Figure 10-19. MAG Work Orders in Hold Display

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
229	TYPE "FINI MAG<CR>"	DMU DISPLAYS MAG WORKORDERS IN FINISHED STATE AND REPROMPTS, "DMU>"	FIGURE 10-20
230	TYPE "FINI MCA<CR>"	DMU DISPLAYS MCCA WORKORDERS IN FINISHED STATE AND REPROMPTS, "DMU>"	FIGURE 10-21
231	TYPE "COMP QAF<CR>"	DMU DISPLAYS QAF WORKORDERS IN FINISHED STATE AND REPROMPTS, "DMU>"	FIGURE 10-22
232	TYPE "EX<CR>"	MIPS PROMPTS, "FUNCTION:"	
233	DISMOUNT HDT-AM		
234	TYPE "ATTN HCS YES"	DISMOUNTS HDT-AM FOR MIP813020001 AND MIP813030001	

```
STRING: MIPS1          WORK ORDERS IN FINISHED STATE          DATE:30-OCT-1981
                            FOR MAG PACKAGE                   TIME:04:55:10.74
```

LINE	PRI	SEQ.	WORK ORDER ID	SOURCE HDT	SCENES	STATUS	ATTEMPTS
1	30	0001	MIPS13010001MAG01	L4MHR8126401	003	IPS001	01
2	30	0002	MIPS1302L001MAG01	L4MHR8126401	001	IPS001	02

Figure 10-20. MAG Work Orders Finished Display

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STRING: MIPS1 WORK ORDERS IN FINISHED STATE DATE:30-OCT-1981
FOR MCA PACKAGE TIME:04:55:40.53

LINE	PRI	SEQ.	WORK ORDER ID	SOURCE HDT	SCENES	STATUS	ATTEMPTS
1	30	0001	MIP813010001MCA01	L4MHR8126401	003	IPS001	01

Figure 10-21. MCA Work Orders Finished Display

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STRING: MIPS1 WORK ORDERS IN COMPLETE STATE DATE:30-OCT-1981
FOR QAF PACKAGE TIME:04:56:30.49

LINE	PRI	SEQ.	WORK ORDER ID	SOURCE HDT	SCENES	STATUS	ATTEMPTS
1	30	0010	MIP81301000100AF01	L4MHR8126401	003	IPS001	01

Figure 10-22. QAF Work Orders Complete Display

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10.4.2 MANUAL CLOUD COVER ASSESSMENT (MCCA)

Concurrently with the MAG activities the MCCA task is being performed. This example is a detailed sequence of a single work order being processed. The subsampled scenes are displayed for operator interaction to assess cloud cover, accumulate scores on a quadrant basis and produce a processing summary report when assessment is complete.

MSS Band 2 is the nominal band for assessment of cloud cover. Two bands are available with selection possible by cloud cover analyst. Band 1 is desirable as a back up band.

Minimum hardware to support MCCA is listed below:

a. VAX 11/780 with 1 megabyte of memory

b. One 175-mbyte disk

c. LA36 terminal (system console)

d. Comtal Image Display terminal

e. VT100 terminal.

Procedure examples are given below.

MCCA-1 TEST 1 - DISPLAY AND SCORING PROCEDURES

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
1	Activate the test CCP program and the test LOGGER.		Normally, the CCP and logger will be executing already. This is the activation of the test CCP and test logger.
2	Log on to system under "MIPS" account at the operator's terminal.	String control menu illustrated in Figure 10-23 is displayed, and the "FUNCTION" prompt is issued.	
3	Type "8 (C/R)"	The MCCA process is activated and the prompt "MCA-Please enter your name>" is issued.	
4	Type "JOEL MASHBAUM (C/R)"	The MCCA process creates mailboxes required to communicate with the logger and CCP. MCCA sends a PKG start handshake message to the CCP, and waits for the CCP response.	
5	At the CCP terminal, type "CO(C/R)"	The CCP reads the start handshake message from the MCCA process and sends a response to MCCA. At the CCP terminal, the following is printed: "BOTH MAILBOXES ACTIVE" "START HANDSHAKE" At the MCCA operator terminal, the MCCA command menu (Figure 10-24) is displayed and the "MCA>" prompt is issued.	
6	At the operator's terminal, type "ASSN(C/R)"	The following prompt is displayed "MCA - Which device (1,2)?>"	

```
******************************* STRING CONTROL MENU *******************************
*                                                                                 *
*        1        String Initialization(INIT)                                     *
*        2        Local Process Request Creation(EPIC)                            *
*        3        Package Communication(ATTN)                                     *
*        4        Work Order Queue Management(DMU)                                *
*        5        Manual Process Request Transfer(MIN)                            *
*                                                                                 *
*        6        Package Status Display(STAT)                                    *
*        7        MSS Archive Generation(MAG)                                     *
*        8        Manual Cloud Cover Assessment(MCCA)                             *
*        9        Quality Assurance Film Generation (QAF)                         *
*        10       Performance Evaluation Product Generation(PEPG)                 *
*        11       Map Digitizing(DIG)                                             *
*        12       Control Point Library Building(CPLB)                            *
*        13       Control Point Failure Display(FAIL)                             *
*                                                                                 *
*        14       On-Line Display Setup(ODP)                                      *
*        15       Logger Management(LOG)                                          *
*        EX(IT)   Exit String Control                                             *
*        HE(LP)   Display this Menu                                               *
*                                                                                 *
***********************************************************************************
FUNCTION:
```

Figure 10-23. String Control Menu

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**** Manual Cloud Cover Assessment ****

Version MCA001

Main Menu

FUNCTION	DESCRIPTION
ASSN	Assign Comtal
NEXT	Get Next Work Order
LIST	List Work Order
SCOR	Begin Scoring
HELP	Display This Menu
EXIT	Close Out this Work Order and Exit MCCA

MCA>

Figure 10-24. MCCA Main Menu

MCCA-1 TEST 1 - DISPLAY AND SCORING PROCEDURES

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
7	Type "1(C/R)"	A channel is assigned to Comtal Unit Ø1 and the "MCA>" command prompt is re-issued.	
8	Type "NEXT(C/R)"	The MCCA process requests a work order from the CCP via mailbox message. The test PCE receives the message and outputs the following at its terminal: "W.O. Request" "W.O. present? (1 = yes, Ø = no)>"	
9	At the CCP terminal, type "1(C/R)"	The test PCE outputs the following prompt "Select WOS name -1- MCA001.WOS -2- MCA002.WOS -3- MCA003.WOS <CR> Enter another name Selection>"	Normally this handshake happens without operator interaction
10	At the CCP terminal, type "1(C/R)"	The test PCE provides a work order message to the MCCA process. The MCCA process then accesses the WOS file, creates a scratch file (CCA), and issues the "MCA>" prompt.	
11	At the operator's terminal, type "LIST(C/R)"	The MCCA process produces the work order summary display illustrated in Figure 10-25, and issues the "MCA>" prompt.	
12	Type "SCOR(C/R)"	The MCCA process will issue the following prompt "MCA-Specify scene number (<CR>= next unscored)>"	
13	Type "1 (C/R)"	The subsampled image file and RLUT file are accessed. The	

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**** MCCA Work Order Summary ****
MDT-RM: L4MMR8130907

SCENE NO.	INTERNAL SCENE ID	MSS BANDS	SCORE 1 (%)	SCORE 2 (%)	SCORE 3 (%)	SCORE 4 (%)
1	4M1011020105	1,2	NA	NA	NA	NA
2	4M1011030105	1,2	NA	NA	NA	NA

NA = Not assessed
There are 0 scenes assessed.

MCA>

Figure 10-25. Work Order Summary

MCCA-1 TEST 1 - DISPLAY AND SCORING PROCEDURES

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
		entire image is read, corrected and displayed. The image is then annotated. Figure 10-26 illustrates the content and format of the annotation data. Once the image is displayed, the following prompt is issued: "MCA - Enter score for quadrant 1 (NA = no assess, C = Chg band, <CR> = skip quad)>"	
14	Type "Ø(C/R)"	The cloud cover score is displayed on the Comtal above the quadrant (see Figure 10-27)	
15	Repeat step 14 for each of the remaining 3 quadrants entering 10, 20,30. Once the last quadrant is scored the following occurs:	The MCCA process displays the following prompt: "MCA - Specify scene number (<CR> = next unscored)>"	
16	Type "(C/R)" Time the duration from the entering of (C/R) and the output of the score prompt. It should be $\leq$8 seconds.	The MCCA process displays the next image as described in step 4. The message "MCA - Scene 2 Selected" is printed to indicate the scene displayed. Next, the following prompt is issued. "MCA - Enter score for quadrant 1 (NA = no assess C = chg band, <CR> = skip quad)>"	
17	Type "C(C/R)"	The MCCA process accesses the subsampled image file to read and display the alternate MSS image for this scene. It then prompts with "MCA - Enter	

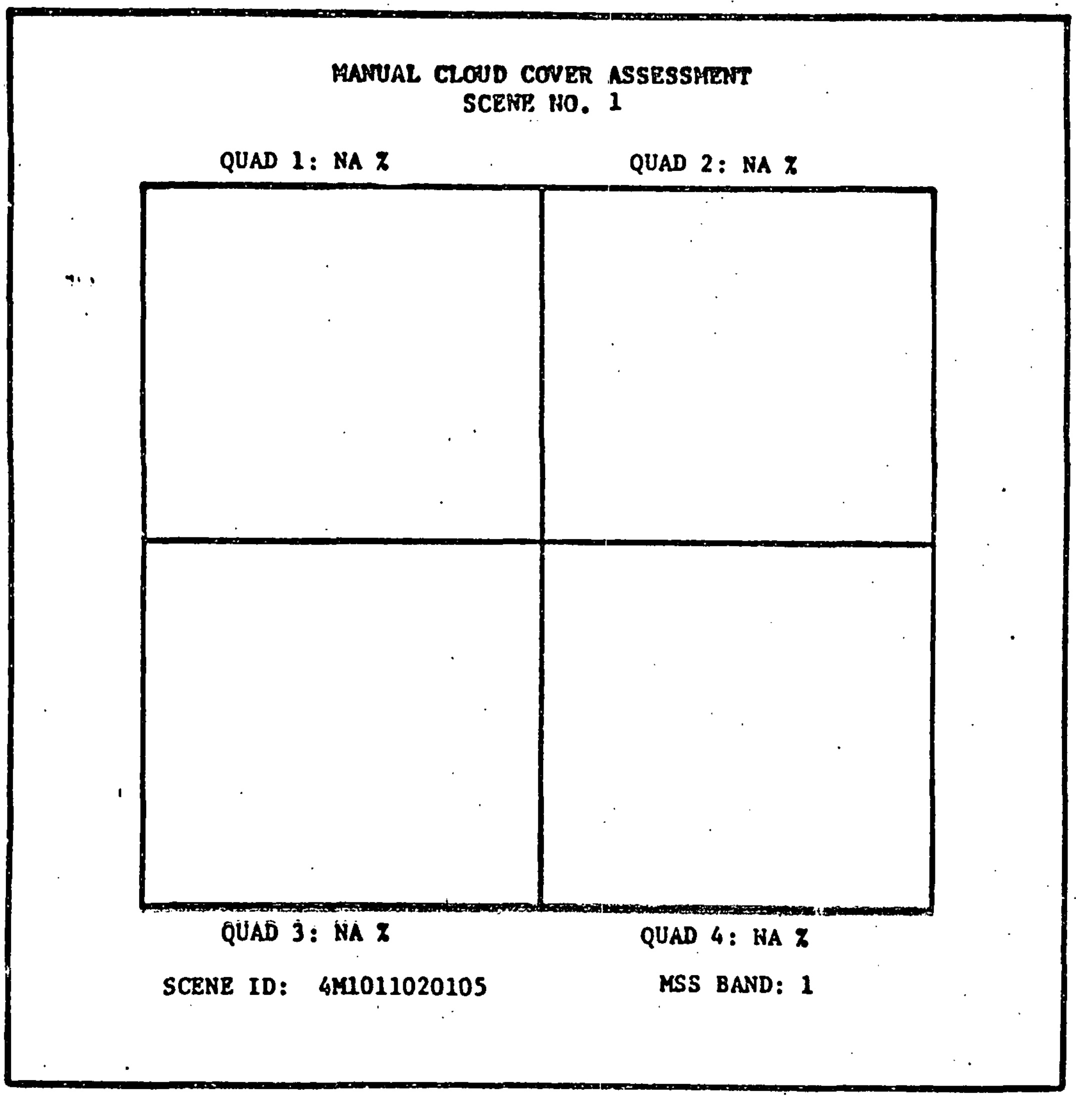

Figure 10-26. Comtal Display Screen Format

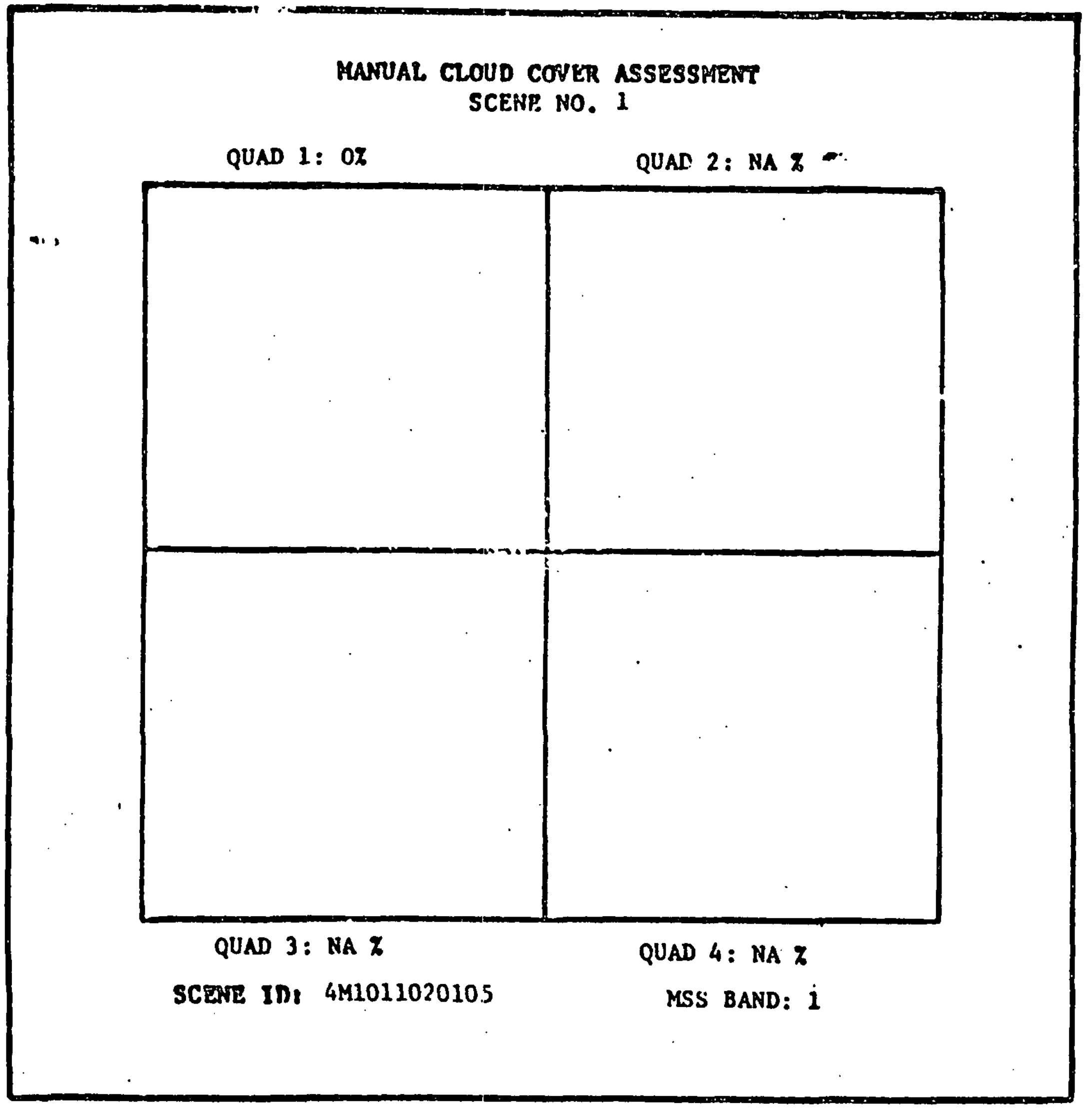

Figure 10-27. Comtal Display Screen Format

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MCCA-1 TEST 1 - DISPLAY AND SCORING PROCEDURES

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
		score for quadrant 1 (NA = no assess, C = chg band, <CR> = skip quad)>"	
18	Type "20 (C/R)" Time the duration from entering (C/R) to the issuance of the next prompt. It should be ≤5 seconds.	The cloud cover score of 20 is displayed on the Comtal above the first quadrant.	
19	Repeat step 18 for each of the remaining 3 quadrants entering 44, 55, 66. Once the last quadrant is scored the following occurs:	The MCCA process displays the following prompt: "MCA - Specify scene number (<CR> = next unscored)>"	See Figure 10-28
20	Type "\(C/R)"	This returns to the "MCA>" prompt.	
21	Type "LISN(C/R)"	The MCCA S/W determines this is an illegal function, outputs the following message: "MCCA-ILLEGAL FUNCTION, TRY AGAIN") and re-issues the "MCA>" prompt.	
22	Type "HELP"	The MCCA command menu is displayed (see Figure 10-24).	
23	Type "LIST (C/R)"	A work order summary is displayed at the user's terminal (Figure 10-29) and then the "MCA>" prompt.	

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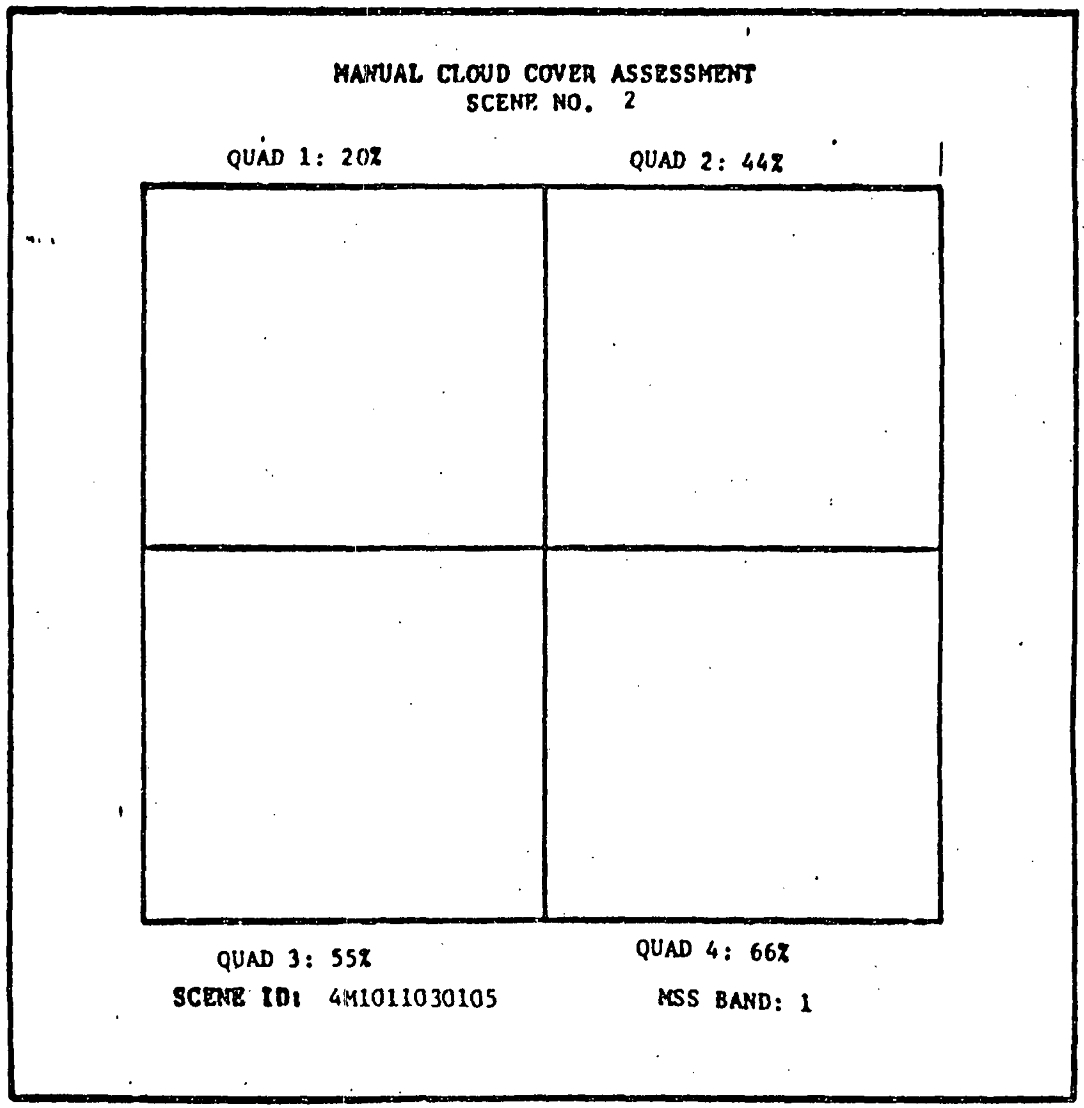

Figure 10-28. Comtal Display Screen Format

**** MCCA WORK ORDER SUMMARY ****
HDT-RM: L4MMR8130907

SCENE NO.	INTERNAL SCENE ID	MSS BANDS	SCORE 1 (%)	SCORE 2 (%)	SCORE 3 (%)	SCORE 4 (%)
1	4M1011020105	1,2	0	10	20	30
3	4M1011030105	1,2	20	44	55	66

NA = Not assessed

There are 2 scenes assessed.
MCA>

Figure 10-29. Work Order Summary

MCCA-1 TEST 1 - DISPLAY AND SCORING PROCEDURES

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
24	Type "EXIT (C/R)"	MCCA returns the scoring information to the work order set and then prompts "MCA - What should this work order be marked? (C) complete, (I) incomplete>"	
25	Type "C (C/R)"	A Processing Summary Report (see Figure 10-30) is written on the line printer and the CCA, R/C data and subsampled image data files are deleted A W.O. completion notification is sent to the CCP. CCP displays "W.O. complete" in response. Before MCCA exits it sends a package termination message to CCP. At the CCP terminal, the following message is printed: "PACKAGE TERMINATION" At the operator terminal, the "FUNCTION" prompt is re-issued.	
26	Type "EX(C/R)"	The process is terminated and the VMS logout message is printed.	

MCASUM MCCA PROCESSING SUMMARY REPORT PAGE 1

DATE: 4 MAY 81
TIME: 10:00:00

INPUT: PROCESS REQUEST ID: MIP810570012

WORD ORDER ID: MIP810570012MCA01

HDT-RM ID: L4MMR8130907

SCENE NO.	INTERNAL SCENE ID	MSS BANDS	SCORE 1 (%)	SCORE 2 (%)	SCORE 3 (%)	SCORE 4 (%)	QUALITY (# FAULTS)
1	4M1011020105	1,2	0	10	20	30	0
2	4M1011030105	1,2	20	44	55	66	0

NA = NOT ASSESSED

THERE ARE 2 SCENES ASSESSED

PROCESSING TYPE: PRODUCTION

ASSESSMENT TIMES: 4 MAY 81 START: 09:40:05 END: 09:58:37

OPERATOR: JOEL MASHBAUM

PROCESSING ENDED NORMALLY

WORK ORDER MARKED COMPLETE

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10.4.3 QUALITY ASSURANCE FILM GENERATION (QAFG)

All scenes selected for archive generation will have one band exposed on 70 mm film. The radiometrically corrected data will be further corrected geometrically for earth rotation. QAFG tasks can be accomplished concurrently with MAG or separately, if necessary.

Minimum hardware to support QAFG is listed below:

a. VAX 11/780 with 2 megabyte of memory

b. Three 176 megabyte disks

   1. 1 System disk where VMS operating system resides

   2. 1 user disk where all QAF software resides

   3. 1 image data disk

c. LA36 terminal (system console)

d. Dicomed film recorder

e. One VT100 video terminal

f. One line printer.

A typical sequence for normal processing is as follows.

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QAF Test 1 Normal Processing

STEP	OPERATOR ACTION	SYSTEM RESPONSE	COMMENTS
1	On the MIPS terminal, LOGIN to the MIPS account	VMS will respond with "Welcome to VAX/VMS V2.2 on Node _MIPS2::". The MIPS command menu is shown in Figure 10-31. The prompt "FUNCTION:" will be displayed.	
2	TYPE "IN (C/R)"	The CCP and LOGGER will be activated and the following message is typed: "%RUN-S-PROC-ID", identification of created process is the process ID assigned by VMS. The message "CCPPCE PACKAGE CONTROL EXECUTIVE IS ACTIVATED WOID=" is sent to the system console. The prompt "FUNCTION:" is displayed.	
3	TYPE "FM (C/R)"	The film mount utility is activated and displays the version number and link date at the operator's terminal and at the system console. The message "FMNT-ENTER FILM ROLL ID (MNSFTYYDDDXX):" is displayed.	
4	Type in film roll ID "L4ZQR8122303(C/R)"	FMOUNT recognizes the ID specified is invalid (the character "Z") and issues the following error message: "FMNT - FIELD 3 OF FILM ROLL IS INVALID". "FMNT - ENTER FILM ROLL ID (MNSFTYYDDDSS):" prompt is issued.	

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```
****************************** MIPS COMMAND MENU ******************************
*                                                                             *
*                                                                             *
* IN(IT)  STRING INITIALIZATION          AT(TN)    ATTENTION UTILITY          *
* AL(LOC) SHOW DISK ALLOCATION           OD(P)     ON-LINE DISPLAY UTILITY    *
* CH(AR)  SET PACKAGE CHARACTERISTICS    CU(RD)    COMTAL DISPLAY UTILITY     *
* CA(PS)  SET STRING CAPABILITIES        ID(UMP)   INTERACTIVE DUMP UTIL.     *
*                                        FM(OUNT)  70MM FILM MOUNT UTILITY    *
* MA(G)   MSS ARCHIVE GENERATION                                              *
* MC(CA)  MANUAL CLOUD COVER ASSESSMENT  DM(U)     QUEUE MANIPULATION         *
* QA(F)   QUALITY ASSURANCE FILM GEN.    MI(N)     MMF INPUT PROCESS          *
*                                                                             *
* PE(PG)  PERF. EVAL. PRODUCT GEN.       EP(IC)    ENGINEERING PR CREATION    *
* LP(EPG) LOCAL PEPG PROCESISNG          ST(AT)    PACKAGE STATUS DISPLAY     *
*                                                                             *
* DI(G)   MAP DIGITIZING                 HE(LP)    REDISPLAY THIS MENU        *
* GP(GEN) CONTROL POINT GENERATION       EX(IT)    EXIT SRING CONTROL         *
* FA(IL)  CONTROL POINT FAILURE DISPLAY                                       *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*******************************************************************************
FUNCTION:
```

Figure 10-31. MIPS Command Menu

QAF Test 1 Normal Processing

STEP	OPERATOR ACTION	SYSTEM RESPONSE	COMMENTS
5	Type in film roll ID "L4MQR8122303(C/R)"	FMOUNT issues the prompt: "FMNT-ENTER EXPECTED NUMBER OF FRAMES:"	This is an estimated number of frames on the roll.
6	Type in number of frames "20(C/R)"	FMOUNT starts writing the film roll ID while displaying: "FMNT - WRITING ROLL ID...." and then writing test pattern with the message "FMNT - WRITING TEST PATTERN FRAME.....". At the end of writing test pattern, FMOUNT displays the messages: "FMNT - DICOMED MOUNTED FOR FILM ROLL ID: L4MQR8122303" and "FMNT - FILM MOUNT UTILITY COMPLETE." The "FUNCTION:" prompt is issued.	It should take about 2 minutes to write each frame. MNFSTYYDDDXX is echoed as entered in step 2.
7	Type "DMU (C/R)"	The DMU command summary is displayed, Figure 10-32. The prompt "DMU>" is issued on the terminal.	
8	Type "DISP (C/R)"	The display menu of DMU is listed on the terminal, Figure 10-33. The "DMU>" prompt is issued.	
9	Type "WOTO (C/R)"	DMU creates a display of the work orders in the string. Figure 10-34 illustrates the format. The "DMU>" prompt is issued.	

STRING: MIPS1 DMU COMMAND SUMMARY DATE:11-OCT-1981
TIME:22:48:58.72

ENTER THIS..	TO DO THIS...
DISP	SELECT A DMU DISPLAY
EXIT	EXIT THE DMU SESSION
HELP	DISPLAY THIS MENU
PWOR	CHANGE THE (P)RIORITY OF A GIVEN (W)ORK (OR)DER
WCOM	ATTACH A (COM)MENT TO A WORK ORDER
POSI	CHANGE THE SCHEDULING (POSI)TION FOR ONE WORK ORDER
RWOR	(R)EWORK A (W)ORK (OR)DER
RQUE	(R)ESEQUENCE THE ENTIRE SCHEDULING (QUE)UE
FLPR	(FL)USH A (P)ROCESS (R)EQUEST
FWOR	(F)LUSH A (W)ORK (OR)DER
RSET	(SET) WORK ORDER TO (R)EADY STATE
CSET	(SET) WORK ORDER TO (C)OMPLETE STATE
HSET	(SET) WORK ORDER TO (H)OLD STATE
SBOU	(S)ET A-TAPE (BOU)NDARY
CBOU	(C)LEAR A-TAPE (BOU)NDARY

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Figure 10-32. DMU Command Summary Table

```
STRING:  MTPS1              DMU COMMAND SUMMARY              DATE:11-OCT-1981
                                                             TIME:22:55:13.98

ENTER THIS..                           TO DO THIS...
------------     -----------------------------------------------------------
ACPR     . . . . . . . DISPLAY A SUMMARY OF (AC)TIVE (P)ROCESS (R)EQUESTS
PRWO     . . . . . . . DISPLAY THE (P)ROCESS (R)EQUEST (W)ORK (O)RDERS
WOTO     . . . . . . . DISPLAY (W)ORK (O)RDER STATE (TO)TALS FOR EACH PACKAGE
HOLD     . . . . . . . DISPLAY WORK ORDERS IN (HOLD) STATE FOR A PACKAGE
READ     . . . . . . . DISPLAY WORK ORDERS IN (READ)Y STATE FOR A PACKAGE
PART     . . . . . . . DISPLAY WORK ORDERS IN (PART)IAL STATE FOR A PACKAGE
COMP     . . . . . . . DISPLAY WORK ORDERS IN (COMP)LETE STATE FOR A PACKAGE
FINI     . . . . . . . DISPLAY WORK ORDERS IN (FINI)SHED STATE FOR A PACKAGE
HELP     . . . . . . . DISPLAY THE COMMAND SUMMARY MENU
EXIT     . . . . . . . EXIT DMU
```

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Figure 10-33. Display Menu of DMU

STRING: MIPS1

WORK ORDER SUMMARY

DATE:11-OCT-1981
TIME:23:25:41.31

LINE	PACKAGE	WORK ORDERS: READY	PARTIAL	HOLD	COMPLETE	FINISHED
1	MAG	0	0	2	0	1
2	MCA	2	0	0	0	0
3	OAF	3	0	0	0	0
4	PEP	0	0	0	0	0
5	CFG	0	0	0	0	0

Figure 10-34. Work Order Summary

QAF Test 1 Normal Processing

STEP	OPERATOR ACTION	SYSTEM RESPONSE	COMMENTS
10	Type "READ QAF(C/R)"	The work orders ready for QAF are displayed, Figure 10-35. At this point we wish to move work order "MIP81282L003QAF01" to hold state. The "DMU>" prompt is issued.	
11	Type "HSET 3(C/R)"	DMU work order MIP81282L003QAF01 state is changed to .....HOLD". "DMU>" prompt is issued.	
12	Type "WOTO (C/R)"	Display shows work order MIP81282L003QAF01 is now in hold state. "DMU>" prompt is issued.	
13	Type "EXIT (C/R)"	To exit DMU process. "DMU TERMINATION is displayed and the "FUNCTION:" prompt is issued.	
14	Type "HELP (C/R)"	Display MIPS main menu. "FUNCTION:" prompt is issued.	
15	Type "QAF (C/R)"	QAF begins processing work order MIP81282L001QAF01. "FUNCTION:" prompt is issued. At the operator console, messages: "QAF PROCESSING ACTIVATED" and "QFFILM ACTIVATED" are displayed.	
16	Type "ST (C/R)"	The status display command menu appears on the screen, Figure 10-36. The "STATUS>" prompt is issued.	While in this mode QAF status can be checked periodically.

```
STRING: MIPS1          WORK ORDERS IN READY    STATE            DATE:14-OCT-1981
                            FOR QAF PACKAGE                     TIME:15:34:59.30

LINE   PRI  SEQ.     WORK ORDER ID      SOURCE HDT     SCENES   STATUS   ATTEMPTS
----   ---  ----   -----------------  ------------   ------   ------   --------
  1     99  0010   MIP81282L0010QAF01 L4MHR8122302    003                    00
  2     99  0020   MIP81282L0020QAF01 L4MHR8122302    003                    00
  3     99  0030   MIP81282L0030QAF01 L4MHR8122302    003                    00

OMU>
```

Figure 10-35. QAF Work Orders in Ready State Display

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```
STRING:  MIPS1          STATUS DISPLAY COMMAND MENU          DATE:12-OCT-1981
                                                              TIME:23:33:40.84

ENTER THIS... TO DO THIS...
------------- ---------------------------------------
SUM --------- DISPLAY PACKAGE STATUS SUMMARY
MAG --------- DISPLAY MAG PACKAGE STATUS
PEP --------- DISPLAY PEPG PACKAGE STATUS
RAF --------- DISPLAY RAF PACKAGE STATUS
CFG --------- DISPLAY CFG STATUS
ME ---------- DISPLAY COMMAND MENU
EX ---------- EXIT
```

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Figure 10-36. Status Display Command Menu

QAF Test 1 Normal Processing

STEP	OPERATOR ACTION	SYSTEM RESPONSE	COMMENTS
17	Type "QAF (C/R)"	The current status of QAF is displayed, Figure 10-37. The "STATUS>" prompt is issued.	
18	Type "EXIT (C/R)"	To exit the status process. The "FUNCTION:" prompt is issued.	
19	Type "ATTN QAF PAUSE	This command causes QAF to send "MESSAGE RECEIVED" to terminal and send a message to the operator's console, "QAFQFM I059... QAF PAUSING BY OPERATOR... WOID=MIP81 XXXXXXXXQAF01" Followed with "QAFQFM I097 QAF WILL PAUSE AT COMPLETION OF CURRENT SCENE WOID = MIP81XXXXXXXXQAF01". The "FUNCTION:" prompt is issued. Wait for "...QAF is PAUSED..." message and then	Repeat steps 15-17 to to show paused state in QAF status.
20	Type "ATTN QAF RESUME (C/R)"	This command resumes QAF processing when the process is in paused state. The message "MESSAGE RECEIVED" is output to terminal and message "...QAF RESUMED..." is output to the operator console. The "FUNCTION:" prompt is issued. When QAF processing completes processing all available work orders in the ready queue, termination messages are output to the operator's console and QAF exits the system, Figure 10-38.	

```
STRING:  MIPS1            QAF PACKAGE STATUS DISPLAY              DATE:14-OCT-1981
                                                                  TIME:15:49:34.65

      PACKAGE ACTIVATION TIME= 15:49:19.92            PROCESS STATE= ACTIVE
   # OF SCENES IN WORK ORDER=     3            # OF SCENES ON ROLL=    0

        CURRENT WORK ORDER ID= MIP81282L001QAF01   INPUT TAPE ID= L4MHR8122302
                 FILM ROLL ID= L4M0R8122303          CURRENT BAND= 4
   CURRENT INTERNAL SCENE ID= 4M0010300223

        # OF FRAMES AVAILABLE=   17            TOTAL FRAMES USED=      3
           NEXT SCENE FRAME #=    1            SCENES COMP ON VS=      0
```

Figure 10-37. QAF Package Status Display

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```
Opcom, 23:04:55.42, MIPS              Acent=IGF
Opcom, QAFOFM I047 WORK ORDER PROCESSING COMPLETE          00000000   WOID=MIP81282L0010AF01

Opcom, 23:05:01.61, MIPS              Acent=IGF
Opcom, QAFOFM I059 ... WRITING QA TEST PATTERN ...         00000000   WOID=MIP81282L0020AF01

Opcom, 23:14:58.92, MIPS              Acent=IGF
Opcom, QAFOFM I047 WORK ORDER PROCESSING COMPLETE          00000000   WOID=MIP81282L0020AF01

Opcom, 23:15:05.14, MIPS              Acent=IGF
Opcom, QAFOFM I049 ... QAF PROCESSING COMPLETE ...         00000000   WOID=MIP81282L0020AF01

Opcom, 23:15:11.34, MIPS              Acent=IGF
Opcom, QAFOFF I102 QAFFLM DEACTIVATED                      00000000   WOID=MIP81282L0020AF01
```

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Figure 10-38. Termination Messages

QAF Test 1 Normal Processing

STEP	OPERATOR ACTION	SYSTEM RESPONSE	COMMENTS
21	Type "FM (C/R)"	This command activates the FMOUNT utility. The message "FMNT - VERSION: _____ LINK DATE:XXXXXX" and "FMNT - FILM ROLL L4MQR8122303 CURRENTLY MOUNTED, DISMOUNT? <Y/N>"	
22	Type "Y (C/R)"	The end of roll QA test pattern is written, the messages "FMNT - WRITING TEST PATTERN FRAME..." and "FMNT - NEW ROLL DIRECTORY FILE CREATED" are output to the system console and terminal. The prompt "FMNT - ENTER FILM ROLL ID (MN?SFTYYDDDXX):" is issued.	The filmm roll dir. file is copied to a feedback file "QAFXXX.DAT" and notification is sent to the CCP.
23	Type "\EX (C/R)"	This causes FMOUNT to exit without requesting mount information. The message "FMNT - FILM MOUNT UTILITY COMPLETE" and "FUNCTION:" prompt are issued.	

END OF TEST 1

10.5 OPERATIONS SUPPORT

10.5.1 ERROR HANDLING CONCEPTS

This paragraph states the error handling concepts that are used throughout MIPS software. It establishes the criteria that will be used to classify errors and to determine the appropriate error responses. These responses include:

a. Notification of the operator

b. Operator actions based on error notification

c. Special messages sent to the log

d. Retry of the operation where the error was detected

e. Termination of current work

f. Entering error codes into MIPS process request feedback.

Error messages are logged and contain, at a minimum, the time the error is detected, identification of the software component detecting the error, a six-digit error code uniquely identifying the error, and a 60-byte character string describing the error detected (see Table 10-3).

Severity of Errors

All errors are classified into exactly one of four types:

a. Non-fatal, no operator notification required

b. Non-fatal, operator notification required

c. Non-fatal, operator intervention required

d. Fatal errors.

Table 10-3. Operator Commands to Halt Applications Processing

STOP PROCESSING COMMANDS	WORK LOST	DEACTIVATE PACKAGE	FEEDBACK TO CCP	UNDONE BY	TAKE EFFECT	WHERE PROCESSING BEGINS AGAIN
PAUSE	NO	NO	N/A	RESUME COMMAND	• WHEN CONVENIENT OR • COMMAND CAN BE REJECTED	WHERE IT LEFT OFF
STOP	YES	NO	N/A	RESTART COMMAND	IMMEDIATELY	BEGINS REWORKING PIECE OF WORK WHICH WAS INTERRUPTED
TERMINATE	YES	YES	WORK ORDER COMPLETION MSGS ARE SENT TO CCP FOR EACH OUTSTANDING WO.	PACKAGE REINITIALIZATION	IMMEDIATELY	WORK ORDER
ABORT	YES	YES	ONLY ABORT MSG IS SENT TO CCP LIMITED	PACKAGE REINITIALIZATION	IMMEDIATELY	WORK ORDER

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Non-fatal Errors, No Operator Notification Required

a. Non-fatal errors consist of the following types of errors:

   1. Missing or partial data

   2. Anomalous data

   3. Interface faults (e.g., improper process request)

b. Recover from non-fatal errors automatically and proceed in a timely manner.

c. As much computed data as possible is retained when non-fatal errors occur.

d. When it is available or required, nominal data are substituted for missing, partial or anomalous data.

e. To the extent possible, non-fatal errors are detected before operator intervention is required and recovery shall be effective and appropriate.

f. System software supports automatic retry of standard device (disk, CCT, etc.) I/O.

Non-fatal, Operator Notification Required

a. Non-fatal errors requiring operator notification, but no operator action consist of the following types of errors:

   1. ECC error thresholds exceeded

   2. Data error thresholds exceeded

b. Recovery from this type of error is automatic and proceeds in a timely manner. The software does not require operator response.

c. The operator is notified via a logged message sent to the hard copy terminal. Follow-up messages are sent to the operator when the number of occurrences of the error is a multiple of the error threshold.

Non-Fatal, Operator Intervention Required

a. Non-fatal errors that require operator intervention consist of the following:

1. Invalid or incorrect operator type-in
2. Improperly configured hardware - device offline, wrong tape mounted, etc.
3. HDT positioning errors

b. Operator intervention is limited to the following:

1. Re-entry of invalid or incorrect type-in. The operator shall not enter nominal or default values to be used in the event of problems with other data sources.
2. Correction of hardware problems, or HDT positioning problems in an offline mode.
3. Notification to software when offline corrections are complete.

c. The operator is given the following options:

1. Retry the current processing that resulted in the error after fixing the cause
2. Continue the current process ignoring the error
3. Skip the current unit of work and proceed to the next
4. Indicate that the current unit of work has failed and proceed to the next

5. Terminate the current process in lieu of correcting the problem.

d. Software is written in such a way that non-fatal errors, requiring operator intervention, can be detected and corrected before significant processing has begun. This is accomplished by:

1. Early validation of operator type-ins
2. Early validation of external inputs such as disk files, mailboxes, etc.
3. Early validation that hardware configuration meets the needs of the processing to be performed.

This applies to the subsystem as a whole and to individual programs.

e. Recovery shall be effective and appropriate to the problem.

Fatal Errors

a. Fatal errors consist of:

1. Detected system H/W or S/W faults during active processing
2. Internal logic faults, including: recursive faults, unexpected or unidentifiable states, or unrecoverable conditions.

b. All or part of the system (as appropriate) shall be orderly terminated when a fatal error occurs. This process shall be as automated as possible with operator intervention minimized.

c. In the event of a fatal error, currently active data shall be considered corrupted and shall not be propagated.

10.5.2 OPERATOR NOTIFICATION AND LOGGING

Non-Fatal Errors, No Operator Notification Required

To assist in problem isolation, details of the faulty condition are accumulated and recorded as part of normal processing status, process request feedback, and/or QA feedback, whichever are appropriate. Non-fatal error messages are not logged on the operator's console nor logged by the logger.

Non-Fatal Errors, Operator Notification Required

To assist the operator in isolating easily correctable non-fatal errors (e.g., dirty HDDR record heads) or non-fatal errors that might result in considerable rework if left uncorrected, messages are logged on the operator's console and in the log file. These messages are sent every time error counts reach non-zero multiples of the error count thresholds maintained in the MIPS parameters.

To assist QA in problem isolation and detection, accumulated ECC and other error counts are recorded as part of normal processing status, process request feedback, and/or QA feedback, whichever are appropriate.

Non-Fatal Errors, Operator Direction Required

During the recovery process, sufficient information is reported to the operator to allow accurate assessment of the situation.

Operator recoverable errors are only recorded by the operator when entering appropriate comments into the log that describe offline procedures performed.

Fatal Errors

Error condition codes and error context are logged on the operator's error terminal immediately. The operator is made aware of all major changes to the system state as a result of orderly shutdown. All messages between the operator and software are logged.

10.5.3 RETRY CAPABILITIES

a. By reordering the work orders queue, the operator is capable of retrying any work unit that has failed to process successfully.

b. When automatic positioning of the HDT fails, the following occur:

   1. The operator is given a chance to manually position the tape in order to move past a bad section to where data actually begins. The operator can also manually mount a new tape if it was determined that the wrong tape was mounted.

   2. Upon notification by the operator that manual positioning is complete, software retries automatic positioning to verify the operator's actions.

   These two steps are repeated until the operator explicitly tells software to give up.

c. System software automatically retries I/O operations on the following:

   1. Disks

   2. CCTs

   3. QA film recorder

   4. Comtal

5. Decnet

6. Digitizer

7. AP 180V.

The retries are transparent to applications programs and occur a reasonable and finite number of times. Application software is given the option to enable or disable retries.

d. On all non-fatal errors requiring operator intervention, the operator is given the option to retry the operation that had the error.

SECTION 11

ARCHIVE COMPLETION GENERATION

11.1 ENVIRONMENT RESOURCES

11.1.1 HARDWARE REQUIREMENTS

The archive completion generation transaction is performed by the Ground Management Subsystem (GMS) - an element within the Mission Management Facility (MMF).

DEC2050 hardware systems are employed to run the MSS version of the archive completion generation transaction; similarly, DEC2060 systems are utilized to run the TM version of archive completion generation. The DEC2050/2060 systems are not used interchangeably relative to this software transaction.

Both the DEC2050 system and the DEC2060 system are located in the computer room on the second floor of GSFC Building 28. Figure 5-5 shows the layout of the MMF-M EDP equipment and provides the "equipment unique" ID numbers assigned to each of the hardware items.

11.1.2 SOFTWARE REQUIREMENTS

GMS uses the Decnet system and the four units of software shown below to run the archive completion generation transaction:

a. MIPS/TIPS initial product/archive product data receive process (GX1REC) - computer program design specification, LSD-MMF-CPD-2078

b. GMS MIPS archive generation feedback verification (GPIAFV/A) computer program design specification, LSD-MMF-CPD-2053

c. HDDR product assessment entry program (GQHASS) - computer program design specification, LSD-MMF-CPD-2074

d. GMS archive item close out (GPARCO) - computer program design specification, LSD-MMF-CPD-2046.

11.2 OVERVIEW/BACKGROUND

11.2.1 SCOPE

MMF-M (multispectral scanner products) and MMF-T (thematic mapper products) use different, non-interchangeable versions of the archive completion generation transaction and different EDP hardware systems.

This document addresses the MMF-M version of archive completion generation.

With respect to MMF-M, the scope of the archive completion generation transaction includes:

a. Automatic and periodic interface with MIPS to ascertain the existence of new A-tapes

b. Transferring file names and file contents associated with the newly created A-tapes, from MIPS to MMF-M via Decnet

c. Comparing and verifying the information in the transferred files against existing information in the MMF-M data base

d. Updating the MMF-M data base with the results of the analyses performed in (c.)

e. Creation of permanent entries of new scene data in the MMF-M data base

f. Closing out the archive request.

11.2.2 PRECEDING PROCESSING ACTIVITIES

11.2.2.1 Preceding Activity

The MSS archive generation transaction (MAG - see Section 10) must have run successfully before the archive completion generation transaction can be implemented.

In addition to processing R-tape scene intervals into A-tape scene intervals, MAG generates three files used in subsequent product development processes.

A summary description of these files follows:

a. HDT-A directory file/GHIT data file. These files are generated conjointly in MIPS for each A-tape generated in MIPS. The files are identified by the header AGTXXX, where XXX is a MIPS-supplied sequence number. The A-tape directory files contain:

   1. A-tape ID numbers
   2. Scene interval times
   3. Scenes recorded on the A-tape
   4. Processing information - e.g., cloud cover.

b. MIPS-generated, R to A process request feedback files. These files contain:

   1. The ID numbers of the R-tapes containing good scenes
   2. The ID number of each process request file that was generated for each R-tape

3. The identification of the intervals and scenes used from each R-tape
4. The location of the same intervals and scenes on the A-tape
5. A listing of the R-tape scenes that were not processed
6. A listing of the R-tape scenes that were reworked
7. A listing of the R-tape scenes that were cancelled with a reason given for their cancellation.

c. MIPS-generated, HDT-R/HDT-A quality assurance files. These files are identified by IQYXXX, where Y signifies A, B, or C for MIPS 1, 2, or 3, respectively, and XXX is a MIPS-generated sequence number. The contents of these files provide a "quality" summary for the R to A processing in terms of:
   1. The number of good scenes processed
   2. The number of bad scenes rejected
   3. The identity of the R-tapes and A-tapes used in archive generation.

11.2.2.2 Succeeding Activity

Archive generation completion is succeeded by the PEPG product scheduling transaction (Section 12).

11.3 FUNCTIONAL DESCRIPTION

11.3.1 OPERATIONAL OVERVIEW

As shown below, archive completion generation is the seventh product development

software transaction in Scenario II - MSS archive generation support.

Scenario II - MSS Archive Generation Support

a. PCS Phase One Scheduling

b. PCS Phase One Completion Notification

c. GSTDN Data Receipt

d. PCS Phase Two Scheduling

e. PCS Phase Two Completion Notification

f. Archive Generation Scheduling

g. Archive Completion Generation

h. GHIT Generation

i. Archive Dissemination Scheduling

j. Archive Dissemination Completion Notification

k. EDC Data Receipt.

Archive generation completion is the mechanism that:

a. Ascertains the existence of new "A" tapes produced by MIPS

b. Via Decnet, transfers the HDT-A tape directory files, the GHIT data files, the R to A process request feedback files and the HDT-R/HDT-A QA files from MIPS to MMF-M

c. Compares user information data in the MMF-M data base against information in the files transferred from MIPS

d. Updates the MMF-M data base

e. Creates permanent entries of new scene data in the data base

f. Closes out the archive request.

Archive completion generation (ACG) is usually run automatically; however, it can be run manually via input to an interactive terminal. When run automatically, ACG is normally scheduled nine times during an eight hour work period. Seven of these runs are allocated to interfacing with MIPS, monitoring the development of new A-tapes in MIPS and processing feedback data associated with A-tape generation. Two runs are reserved for monitoring R to A tape rework in MIPS, with the subsequent processing of feedback data typical to A-tape generation.

The combined output of ACG is 220 scenes per 8 hours work period.

The reasons for running ACG manually are identical to those for running the archive generation scheduling transaction manually, i.e.,

a. The existence of R-tape problems

b. A requirement to process a small work load

c. A requirement to expedite a priority scene interval.

Similarly, the MMF data processing planner decides how ACG is run-manually or automatically-depending on circumstances.

When archive completion generation is run manually, the data processing planner will prepare a list of queries and responses - applicable to GXIREC, GQHASS, GPIAFV/A and GPARCO - for the production control specialist who ultimately controls archive completion generation via interactive terminal.

In the automatic mode, the entire Scenario II - MSS arhive generation support -

is clock triggered periodically and operator intervention is not required except to inspect and file hard copy printouts.

11.3.2 PROCESS FLOW DESCRIPTION

Data flow for the archive completion generation transaction is shown in Figure 11.3-1. A description of this processes follows.

Every time each MIPS string processes R-tape scenes onto an A-tape, it also generates several associative files, namely:

a. HDT-A directory and GHIT data files

b. R to A process request feedback files

c. HDT-R/HDT-A QA files.

for each of the R-tapes processed. The names of these files and a description of their contents are stored in the MIPS string's VAX directory file, TRNFIL.DAT.

MMF-M needs the information stored in TRNFIL.DAT to continue subsequent product development processing, so MMF-M accesses these files automatically and periodically each time ACG is clock triggered.

ACG consists of four units of software:

a. GXIREC

b. GQHASS

c. GPIAFV/A

d. GPARCO

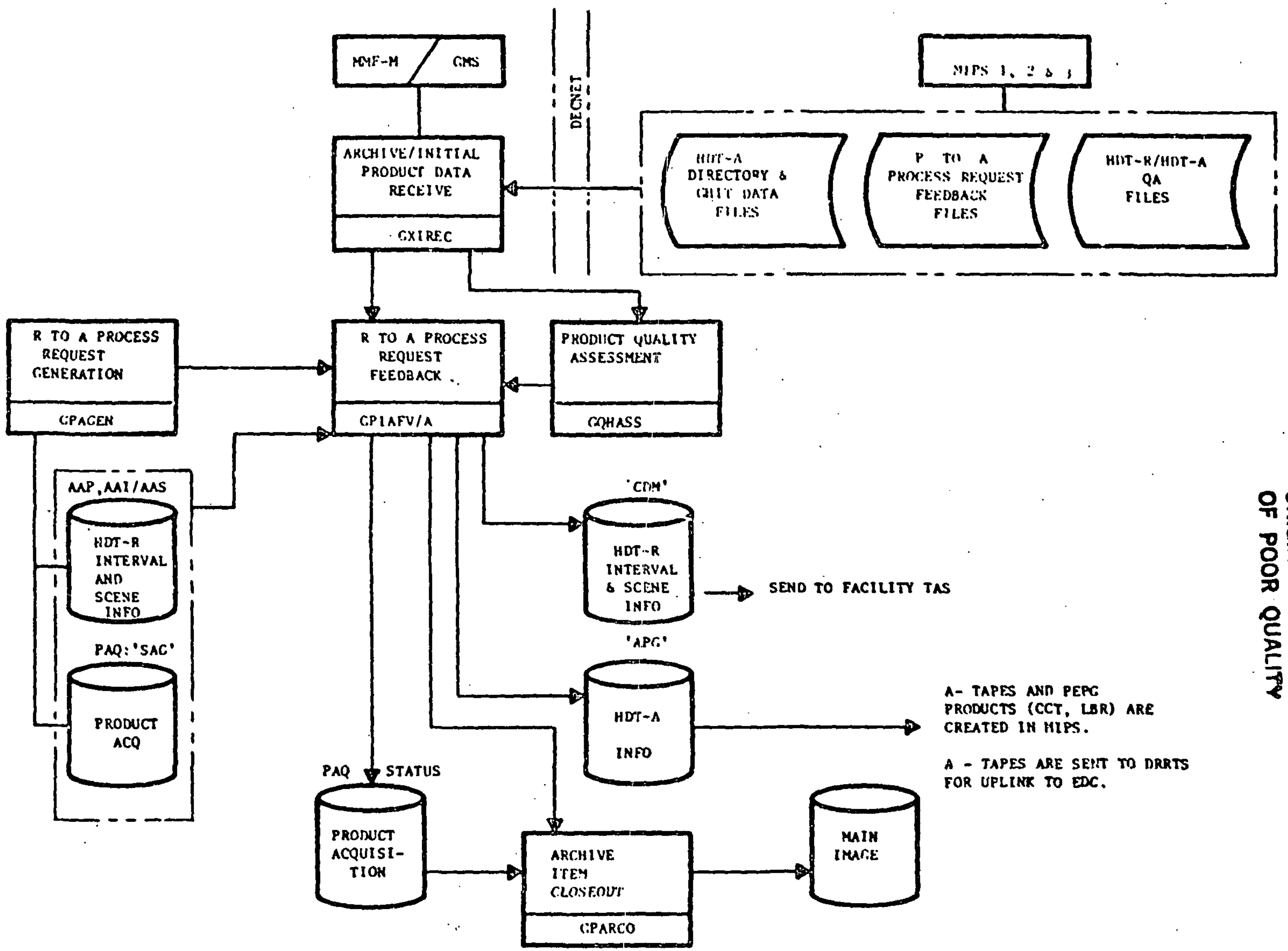

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Figure 11.3-1. Process Flow Diagram Archive Completion Generation Transaction

GXIREC (initial product/archive product data receive process) opens a Decnet data link between MMF and each MIPS string. GXIREC then transfers the TRNFIL.DAT file across Decnet and performs the following processes:

a. It extracts the associative file names from TRNFIL.DAT and records them in the MMF CURINX.IRC file

b. It enters the contents of the associative files in the MMF-M data base.

GQHASS (product assessment entry program) accesses the QA associative files pulled across Decnet, records their contents and generates a summary report.

GPIAFV/A (MIPS archive generation feedback verification) consists of two components, V and A. V stands for verification, A stands for application. The verification component, GPIAFV, verifies the contents of the associative MIPS generated GHIT data files and the process request feedback files and compares the data in these files against corresponding information in the MMF-M data base.

The application component, GPIAFA, utilizes the results of GPIAFV and udpates the following information in the MMF-M data base:

a. IDs of R-tapes successfully processed in MIPS

b. IDs of R-tapes requiring rework

c. Cancellation log entries

d. R-tape re-transmittal log entries.

In addition, GPIAFA creates data base records for newly created A-tapes. Information contained in these records consists of scene definition, scene ID, etc.

11.3.3 INPUT

Input to the archive completion generation transaction consists of:

a. Archive generation process request feedback from MIPS via Decnet data transfer

b. HDT-A tape directory data from MIPS via Decnet data transfer

c. HDT-A GHIT data from MIPS via Decnet data transfer

d. User product standing order data from the MMF-M data base.

11.3.4 OUTPUT

The archive completion generation transaction produces the following outputs:

a. Creation of a CCT tape that allows the MIPS-generated A-tape associative file data to be transferred from MIPS to MMF-M, in the event Decnet is not operational

b. Permanent entry into the MMF-M data base of original scene IDs that were recently acquired and processed to the A-tape level

c. Closes out the archive generation request

d. Updates the following information in the MMF-M data base:

1. R-tape ID
2. A-tape ID
3. ID of scenes acquired
4. ID of scenes cancelled

5. ID of scenes reworked

6. A-tape QA data.

11.4 PROCESS OPERATIONS

A summary of the four units of software - GXIREC, GQHASS, GPIAFV/A and GPARCO - that comprise archive completion generation are presented in paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.4.4.

It is recommended that the CPDSs from which these summaries were extracted be addressed for supplemental data not included here.

11.4.1 MIPS/TIPS INITIAL PRODUCT/ARCHIVE PRODUCT DATA RECEIVE PROCESS (GXIREC)

Computer program design specification (CPDS) number LSD-MMF-CPD-2078.

11.4.1.1 Unit Description and Purpose

This module transfers files related to initial product/archive product generation from MIPS/TIPS to MMF. It also allows files to be entered/tracked into the system when the Decnet link is down.

GXIREC copies all files (related to initial product/archive product generation) mentioned in the VAX-Transfer-File (TRNFIL.DAT) over from MIPS/TIPS (depending on the data base sensor type) via Decnet and enters their names into the CURINX.IRC directory on the DEC-20 at MMF. It also allows files to be entered/tracked into the system when the Decnet link is down.

The common parameters required for the program must supply the Tape/Decnet mode, the operating mode, the directory from which files are to be copied, the number

of VAX strings (nodes) in the facility and valid file names available from the sending facility. Then, depending on the sensor type of the data base in which the program is run, GXIREC does the following for each string within MIPS/TIPS in the Decnet mode.

First the TRNFIL file itself is copied from the MIPS/TIPS string and GXIREC reads it to determine which files are to be transferred. These listed files are checked to see that they have not already been entered in the CURINX.IRC or DELINX.IRC directories. If a listed file is in one of these directories, no further action is taken. If, however, the opposite is true and the file name is valid, then in the automatic mode, the file is copied across Decnet and its name entered in the CURINX.IRC directory. For the manual mode, the operator must indicate which of the files in the TRNFIL file are to be copied before the actual transfer (actual transfer of files across Decnet is done by utility DUASFT).

The above is done for each string. Finally, a processing summary report is generated summarizing all actions taken by the program during the course of its run.

The MIPS/TIPS initial product/archive product data receive program is triggered either by a MIPS/TIPS signal or by periodic polling by MMF through the initial product/archive product completion notifier.

The above method is used to transfer files from MIPS/TIPS if the Decnet link is up. However, if the Decent link goes down, MIPS/TIPS dumps all the files and

their TRNFIL file onto a tape that is then sent to MMF. At the MMF, the tapes are read (done through a JCL) and entered into the MMF system with a file extension of .BIR (example: TRNFIL.BIR, APR001.BIR, etc.). The common-parameter-GXIREC is now set to the tape mode and the operating mode is checked to see that it is manual. In such a case, GXIREC knows that the files are already in the system and all it has to do is to update the directories. The TRNFIL.BIR file is read to determine the files just entered. The various checks done in the Decnet mode are done here also and, if the conditions are met, the file names are entered into the directory ´IRC.´ One extra step is done for the tape mode. When a file name is entered into the ´IRC´ directory, an entry is made to the ´TAKE´ file (GXIREN.CMD) created at the beginning of each run of GXIREC. The entry indicates that the file name´s extension should be renamed to ´IRC´. After completion of a GXIREC run, another JCL in the transaction shall execute this CMD file so all file names now in MMF are as required. Another JCL then deletes the BIR files which were either redundant or not required by the MMF system.

GXIREC will create a summary processing report file (GXIREC.SUM), a user interaction log file (GXIREC.UIL), a ´TAKE´ file (GXIREN.CMD) and a production log (GXIREC.PLG). The summary report file summarizes the processing completed by GXIREC, while the user interaction log file details the operator prompts and responses. The ´TAKE´ file contains all of the files entered by GXIREC into the IRC directory of the data base, which must be renamed to have the same extension. The report files are printed via the job control language (JCL).

Data flow through GXIREC is shown in Figure 11.4-1.

11.4.1.2 Input

a. MMF Data Base

1. CCP, Common Parameter

2. DIN-DIRECTORY-INDEX

3. DSQ-DIRECTORY-SEQ-FILE-NAME

b. TRNFIL: VAX-Transfer file for MIPS/TIPS

c. MIPS/TIPS Decnet data files

d. Operator Intervention

1. Copying of a particular MIPS/TIPS file decision.

11.4.1.3 Output

a. MMF Data Base

1. DSQ-DIRECTORY-SEQ-FILE-NAME

2. DIN-DIRECTORY-INDEX

b. MIPS/TIPS Decnet data files copied from MIPS/TIPS to DEC-20.

c. Processing summary report stored on disk (GXIRECSUM)

d. Operator Prompt

1. Prompt for decision to copy MIPS/TIPS file over Decnet.

e. The GXIREN.CMD 'TAKE' file in tape mode.

CONTENTS OF GXIREC.CMD 'TAKE' FILE

GXIREC.CMD

Delete GXIREN.CMD

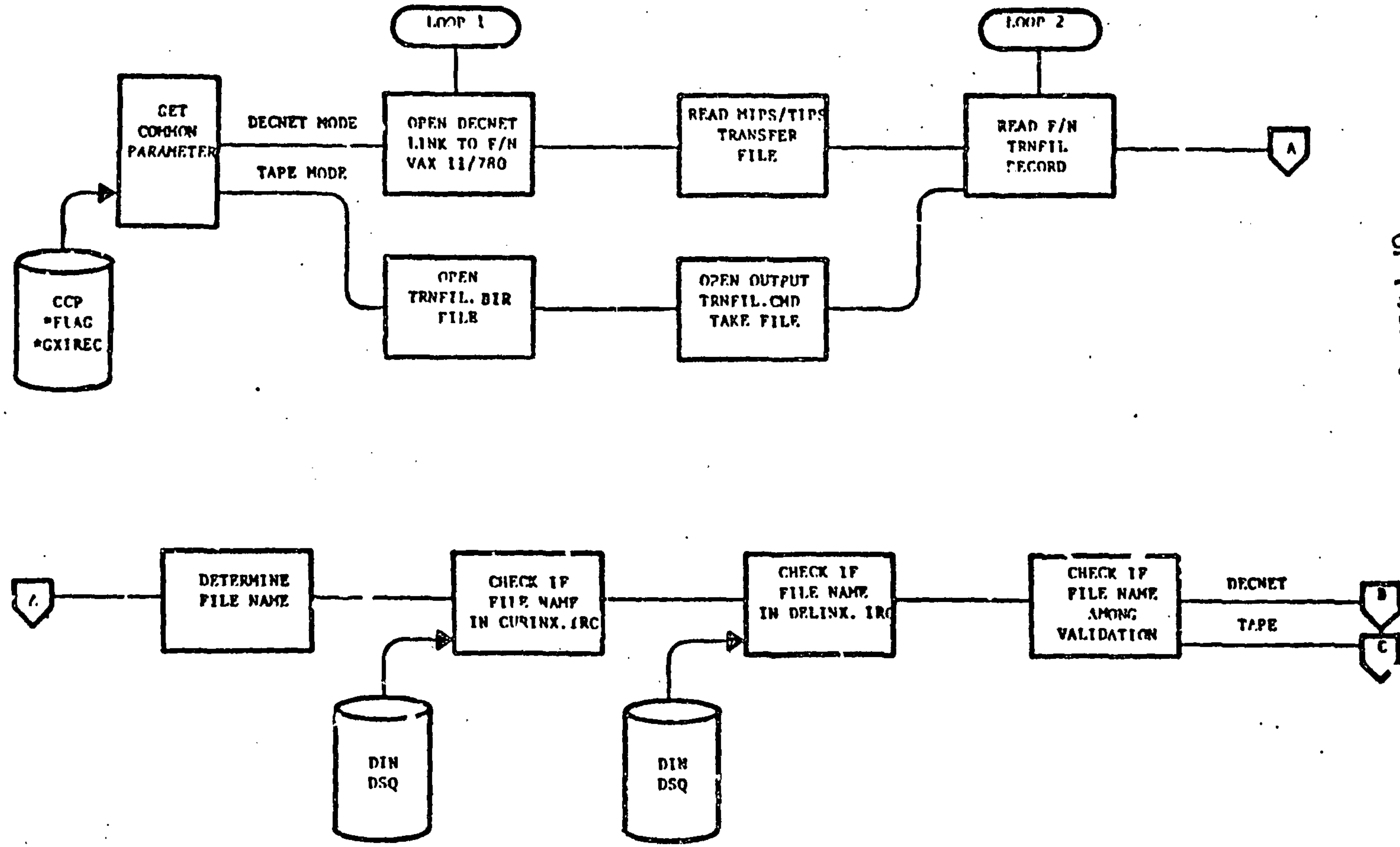

Figure 11.4-1. MIPS/TIPS Initial Product/Archive Product Data Receive (GXIREC) Flow Diagram

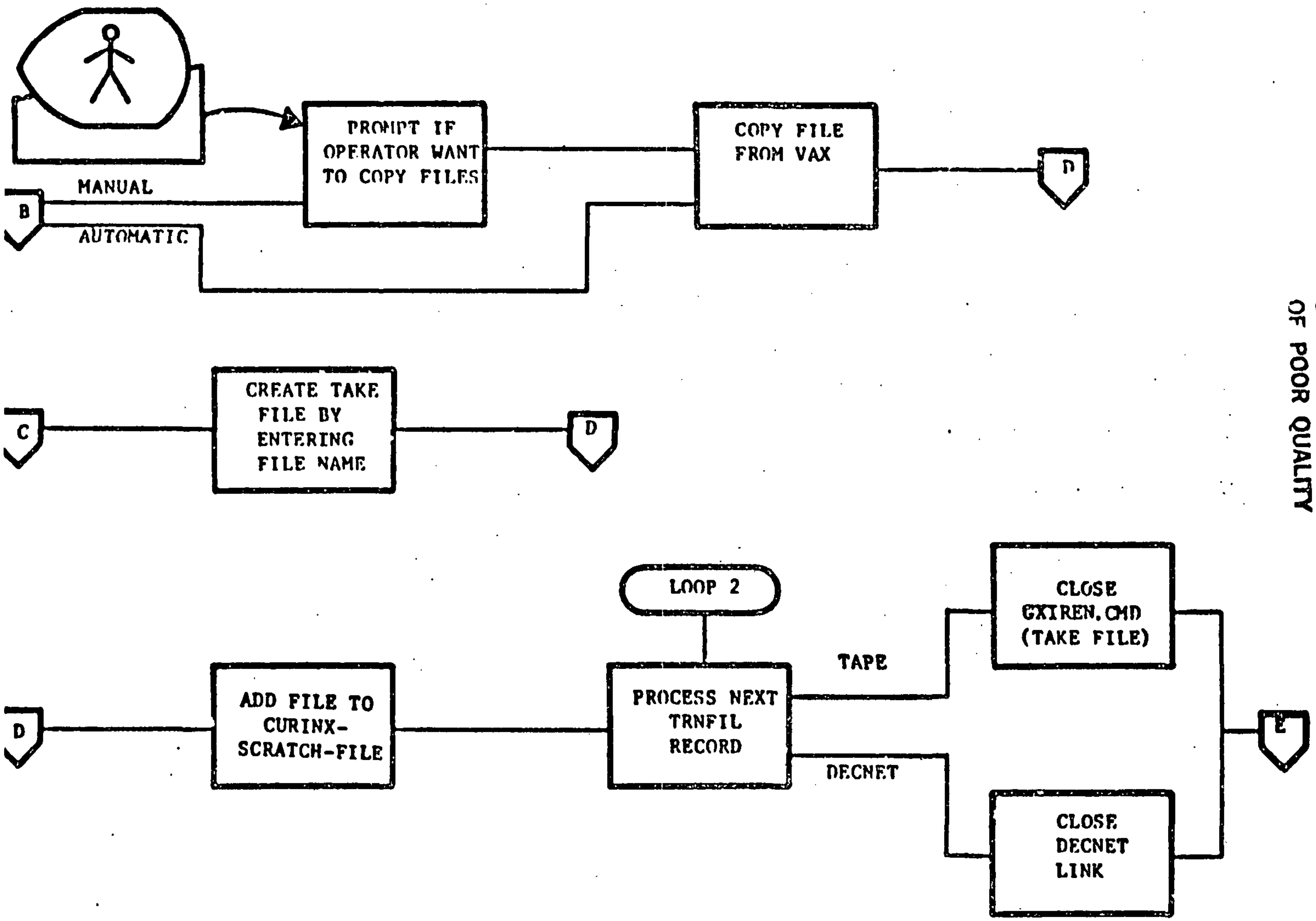

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Figure 11.4-1. MIPS/TIPS Initial Product/Archive Product Data Receive (GXIREC) Flow Diagram (Continued)

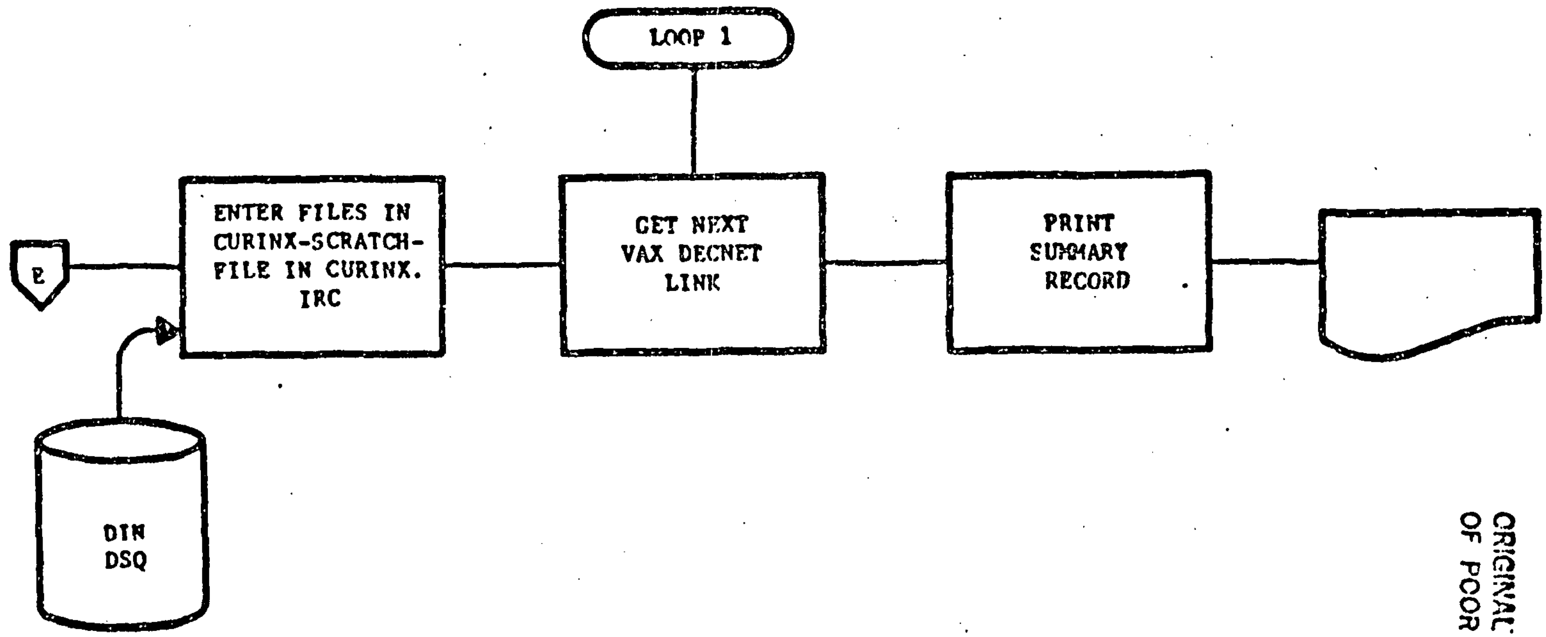

Figure 11.4-1. MIPS/TIPS Initial Product/Archive Product Data Receive (GXIREC) Flow Diagram (Continued)

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Delete GXIREC.SUM

Delete GXIREC.UIL

Delete GXIREC.PLG

Run GXIREC

Print GXIREC.SUM

Print GXIREC.UIL

Print GXIREC.PLG

Take GXIREC.CMD For tape mode only

Delete *.BIR For tape mode only

GXIREN.CMD

Rename _____.BIR _____.IRC

CONTENTS OF GXIREC.CTL "SUBMIT" FILE

GXIREC.CTL

@Delete GXIREC.SUM

@Delete GXIREN.CMD

@Delete GXIREC.UIL

@Delete GXIREC.PLG

@Run GXIREC

@Print GXIREC.SUM

@Print GXIREC.UIL

@Print GXIREC.PLG

@Take GXIREN.CMD For tape mode

@Delete *.BIR For tape mode

GXIREN.CMD

@Rename _____.BIR _____.IRC

CONTENTS OF GXIREC-ERR.CMD "TAKE" FILE

GXIREC-ERR.CMD

@PRINT GXIREC.*

11.4.1.4 Detailed Operations Sequences

11.4.1.4.1 Input

The MIPS/TIPS initial product/archive product receive (GXIREC) program is a part of the archive scheduling and MIPS/TIPS feedback. It could be run automatically or manually by an operator whenever the Decnet is working. It will copy all files mentioned in the VAX-Transfer file over from each MIPS/TIPS and place them in the appropriate directory on the DEC-20. If the Decnet link is down, this module will be run manually in the tape mode by the operator. It will copy files specified in a tape and place them in the appropriate directory.

Operator inputs are supplied only when GXIREC is run in manual mode, and are in the form of responses to program prompts. The following is a list of GXIREC prompts and acceptable responses.

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PROMPT	RESP.	EXPLANATION
Do you wish to enter file name: ________ into CURINX.IRC?	Y	The Decnet is down, and the operator wants to enter the file mentioned into the Directory Data Base
	N	The operator does not want to enter the file into the directory when the Decnet is down
Do you wish to transfer files from this string (Y/N)?	Y	Transfer files of a specific string to DEC-20 via Decnet
	N	Do not transfer files from that string to DEC-20
Do you wish to proceed with the GXIREC Program (Y/N)?	Y	Continue copying files
	N	Halt copying files
Do you wish to have this file transferred (Y/N)?	Y	Transfer files to DEC-20 via Decnet
	N	Do not transfer files to DEC-20.

11.4.1.4.1.1 Other Inputs

When the Decnet link is up, GXIREC transfers the VAX-Transfer file directory (TRNFIL) and the files listed within into the MMF system and updates the CURINX.IRC directory. If the Decnet link is down, all files along with the VAX-transfer file directory (TRNFIL) that are in the MIPS/TIPS's VAX are dumped onto a tape which is later read into the MMF system, each file retaining the first six characters of their original names but under a new extension called '.BIR'. GXIREC enters these files indicated in the TRNFIL.BIR directory into the CURINX.IRC index and changes their extension to .IRC through a 'TAKE' file called GXIREN.CMD. After a GXIREC run, all files not required and still bearing the extension of 'BIR' are deleted.

Data Base Files

GXIREC requires the following data base files as inputs regardless of the operational mode:

a. Common parameter

b. Directory.

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Job Control Language (JCL)

GXIREC can be implemented by keying either of the following statements:

a. @TAKE GXIREC.CMD (for interactive processing)

b. SUBMIT GXIREC.CTL (for batch processing).

The operator should watch out for the TAPE MODE and add:

a. @TAKE GXIREN.CMD

b. @DELETE *.BIR

Processing Messages

Several types of messages can result from processing; they can have a variety of forms, such as operator displays and processing summary messages. Generally, the messages will be one of the following types:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator actions.

b. Warning.

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 11.4-1).

Table 11.4-1. Message/Ac[illegible]n Matrix

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:GORY	MESSAGE	DO NOT RE-RUN GXIREC	PRINT GXIREC.*	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
:AL	FATAL ERROR: DBMS, UNSUCCESSFUL ____________ OPERATION	X					X	
	FATAL ERROR: DBMS, SEE SYSCOM ERROR STATUS	X					X	
	FATAL ERROR: UNABLE TO __________ THE __________ FILE		X	X				X
	FATAL ERROR __________ IS A BAD DATA BASE GXIREC OPERATING MODE	X	X				X	
	FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND	X	X				X	
	FATAL ERROR: THE GXIREC OCCURRENCE OF CCP-COMMON PARAM NOT FOUND	X	X				X	
	FATAL ERROR: INVALID RECORD TYPE OF FIRST TRNFIL.DAT RECORD <FILE-REC-TYPE>	X	X	X				X
	FATAL ERROR: __________ IS A BAD DATA BASE SENSOR TYPE	X	X				X	
	FATAL ERROR: MANUAL MODE EXPECTED FOR 'TAPE' PROCESSING MODE	X	X				X	
	FATAL ERROR: ____________________	X	X				X	
:OR	ERROR: INVALID RESPONSE, VALID ENTRIES ARE Y AND N ONLY					X		
	ERROR: FILE HANDLING PROBLEM IN CALLING DUASFT UTILITY, FILE NOT TRANSFERRED		X					X
	ERROR FAILED TO TRANSFER TRNFIL FILE ON THE VAX TO DEC-20		X					X
	ERROR: ____________________		X		X			

Table 11.4-1. Message/Action Matrix (Cont'd)

RY	MESSAGE / ACTION	DO NOT RE-RUN GXIREC	PRINT GXIREC	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
G	WARNING: A FILE IS ALREADY ENTERED IN CURINX.IRC INDEX				X			
	WARNING: A FILE IS ALREADY ENTERED IN DELINX.IRC INDEX				X			
	WARNING: <FILE-NAME> IS NOT AMONG LIST OF VALID FILES. FILE NOT TRANSFERRED				X			
IATION	INFO: GXIREC ABORTED DUE TO CTRL/C				X			
	INFO: THE NODE DIRECTORY OF THE FACILITY IS:________				X			
	INFO: THE NODE NAME OF THE FACILITY IS:________				X			
	INFO: THE OPERATOR DID NOT WISH TO TRANSFER FILES FROM THIS STRING				X			
	INFO: THE OPERATOR DID NOT WISH TO TRANSFER THE FILE				X			
	INFO: THE FILE TO BE TRANSFERRED IS________				X			
	INFO: THE OPERATOR REQUESTED TERMINATION OF THE PROGRAM				X			
	INFO: NO FILES HAVE BEEN ENTERED INTO THE DIRECTORY DATA BASE				X			
	INFO: THE ________ FILE NAME HAS BEEN SUCCESSFULLY ENTERED TO CURINX.IRC				X			
	INFO: THE ________ FILE HAS BEEN SUCCESSFULLY TRANSFERRED ACROSS DECNET				X			

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Table 11.4-1. Message/Action Matrix (Cont'd)

CATEGORY	MESSAGE	DO NOT RE-RUN GXIREC	PRINT GXIREC	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
INFORMATION (CONT)	INFO: NO FILES HAS BEEN TRANSFERRED FROM THIS STRING				X			
	INFO: GXIREC RAN IN THE ______ MODE				X			
	INFO: ______				X			
OTHER	DO YOU WISH TO HAVE THIS FILE TRANSFERRED (Y/N)?					X		
	DO YOU WISH TO PROCEED WITH THE GXPREC PROGRAM (Y/N)?					X		
	DO YOU WISH TO ENTER THIS FILE NAME: ______ TO CURINX.IRC					X		
	GXIREC: END OF PROCESSING							

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c. Error

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 11.4-1).

d. Fatal Errors.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 11.4-1).

e. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general infomation and require no operator action.

NOTES

a. All Decnet handling and Decnet file transfers will be accomplished by using the Decnet utility DUASFT. For any returned status other than DUASFTØØ1, the program is terminated.

b. If a file mentioned in the TRNFIL file is already in the CURINX.IRC or DELINX.IRC directory, it is not copied across the Decnet link.

c. If a file mentioned in the TRNFIL file is not in the CURINX.IRC or

DELINX.IRC directories and if the CCP-GXIREC-MODE is manual, then the operator is asked if he wants the file transferred. If not, then the program goes to the next file mentioned in the TRNFIL file.

d. The summary report will list files successfully transferred and reasons for not transferring any of the files in the TRNFIL.

e. The number of VAX strings shall be put as a common parameter.

f. If the mode is tape, operating mode must be manual.

g. When the program aborts, the TAKE file must be deleted.

h. In the tape mode, if more than one Decnet link is down, the GXIREC program will have to be run once for each string.

11.4.1.4.2 Output

The MIPS/TIPS initial product/archive product data receive program produces four types of outputs:

a. Operator display (only when GXIREC is run in manual mode)

b. Updated data base files

c. Summary report file (GXIREC.SUM)

d. ´TAKE´ file in *TAPE* mode only (GXIREN.CMD).

Operator Displays

A list of the prompts displayed to the operator and their allowable responses are detailed in paragraph 11.4.1.4.1.

An incorrect response is indicated to the operator by the following:

ERROR: INVALID RESPONSE, VALID ENTRIES ARE Y AND N ONLY.

Other informational displays, such as processing and error messages are detailed in Table 11.4-1.

Files

As part of its processing functions, the only data base file updated by GXIREC is the directory. GXIREC also creates a scratch file (GXIREC.SCR) as part of the data receive processing. GXIREC generates the following:

a. Processing report files

GXIREC will create a summary processing report file (GXIREC.SUM), a user interaction log file (GXIREC.UIL), a 'TAKE' file (GXIREN.CMD) and a production log (GXIREC.PLG). The summary report file summarizes the processing completed by GXIREC, while the user interaction log file details the operator prompts and responses. The 'TAKE' file contains all of the files entered by GXIREC into the IRC directory of the data base and which, therefore, must be renamed to have the same extension. The report files are printed via the job control language (JCL).

11.4.1.5 Frequency of Operation

GXIREC is run once for each HDT-R to HDT-A process request. Therefore, as part of archive generation scheduling, GXIREC will be implemented a maximum of nine times in an eight-hour work period.

GXIREC requires no operator intervention when clock triggered automatically as part of archive generation scheduling.

In the manual mode, input to GXIREC is performed by the MMF production control specialist via KCRT. All decisions and prompt responses required by GXIREC are prepared by the MMF data processing planner. It is, however, the production control specialist's responsibility to verify the completeness and format of this information before entering it via KCRT.

11.4.1.5.1 Control Mechanism

Regardless of whether GXIREC is run manually or automatically, the quality of the processing will be monitored by the production control specialist running the program. Hard copy printouts are to be reviewed for abort or error messages and appropriate action taken. Similarly, KCRT error messages should be corrected by reviewing the inputs with the MMF systems analysts.

11.4.1.5.2 Record Keeping and Information Dissemination

After reviewing all hard copy printouts, the production control specialist is responsible for entering these printouts in their respective program binders.

11.4.2 HDDR PRODUCT ASSESSMENT ENTRY PROGRAM, GQHASS, COMPUTER PROGRAM DESIGN SPECIFICATION (CPDS) LSD-MMF-CPD-2074

11.4.2.1 Unit Description and Purpose

The purpose of the HDDR product assessment entry program (GQHASS) is to record quality information about HDTs and images in the product assessment area of the MMF data base. The program, which is designed to run in automatic mode, may be initiated by either the operator or by the HDDR assessment entry program. The quality information to be processed consists of two kinds of data: image quality and HDT quality.

Image quality refers to the quality of the contents of the tape. Whenever an HDT is created (HDT-Rs created at DRRTS, HDT-As/Ps created at MIPS/TIPS), the quality of the images on the HDT is determined and entered into an image quality data file (IQDXXX). This file identifies the tape ID, the intervals (for HDT-R tapes), the scenes (for HDT-A/P tapes) processed for quality, the pulse IRIG time on the tapes when the image was sampled for quality, and any faults detected.

The IQDXXX image quality data files are sent from DRRTS or MIPS/TIPS to MMF where GQHASS will process the files and enter the image quality information into BTI-BSC-BIQ records within the product assessment area of the MMF data base. The BIQ image quality records must be stored under the proper BSC scene record. This is not a problem for IQDXXX files which come from MIPS/TIPS since the SCENE-ID is included in the IQDXXX record. However, IQDXXX files which have

come from DRRTS (HDT-Rs) will not have SCENE-IDs present, only pulse IRIG times. GQHASS will therefore store all BIQ records from IQDXXX files which come from DRRTS under a dummy SCENE-ID of ØØØØØØØØØØØØ.

HDT quality refers to the quality of the physical HDT itself. Whenever an HDT is read or written (which may occur many times for a given HDT), the quality of the physical HDT is determined and entered into an HDT quality data file (PAYXXX). This file identifies the tape-ID, the scenes on the tape (HDT-A, HDT-P) processed for quality, the IRIG time of the scene, and the corrected and uncorrected error counts for faults detected.

The PAYXXX HDT quality data files are sent from DRRTS or MIPS/TIPS to MMF where GQHASS will process the files and enter the HDT quality information to BTI-BSC-BPA records within the product assessment area of the MMF data base. Like the BIQ image quality records, the BPA HDT quality records must be stored under the proper BSC scene record. As before, records coming from DRRTS will not have SCENE-IDs present and will be stored under the dummy BSC record with SCENE ID ØØØØØØØØØØØØ. Records origiuating in MIPS/TIPS will, as before, be stored under the proper BSC SCENE-ID since the SCENE-ID is available in the PAYXXX record.

11.4.2.2 Input

a. MMF data base

b. IQDXXX Image Quality Data File

c. PAYXXX HDT Quality Data File.

Data flow through GQHASS is shown in Figure 11.4-2.

11.4.2.3 Output

a. MMF data base

b. Processing Summary Report

c. User Interaction Log.

11.4.2.4 Detailed Operational Sequences

The GMS HDDR product assessment entry program (GQHASS) is to record HDT and image quality information in the MMF data base.

GQHASS runs in automatic mode only; no operator intervention is required. In this mode, all IQDXXX image quality data files and PAYXXX HDT quality data files which are listed in the index of current files for the IRC, PRC, and DRC directories will automatically be processed. GQHASS uses the archive product, common parameter, directory, and product assessment areas of the data base. Only the product assessment area, however, is updated.

Functionally, GQHASS consists of two parts. During part 1, GQHASS reads all IQDXXX and PAYXXX files, verifies the records, and stores the quality information as BIQ or BPA data base records under the appropriate BSC record (dummy SCENE-ID or actual SCENE-ID if available). During part 2, GQHASS will attempt to take the BIQ/BPA records stored under the dummy SCENE-ID of 0000000000004 and place them under the correct SCENE-ID. It does this by taking the pulse IRIG time from the BIQ/BPA record, retrieving the AAI and AAS data base records, and finding the proper AAI/AAS records such that the IRIG time

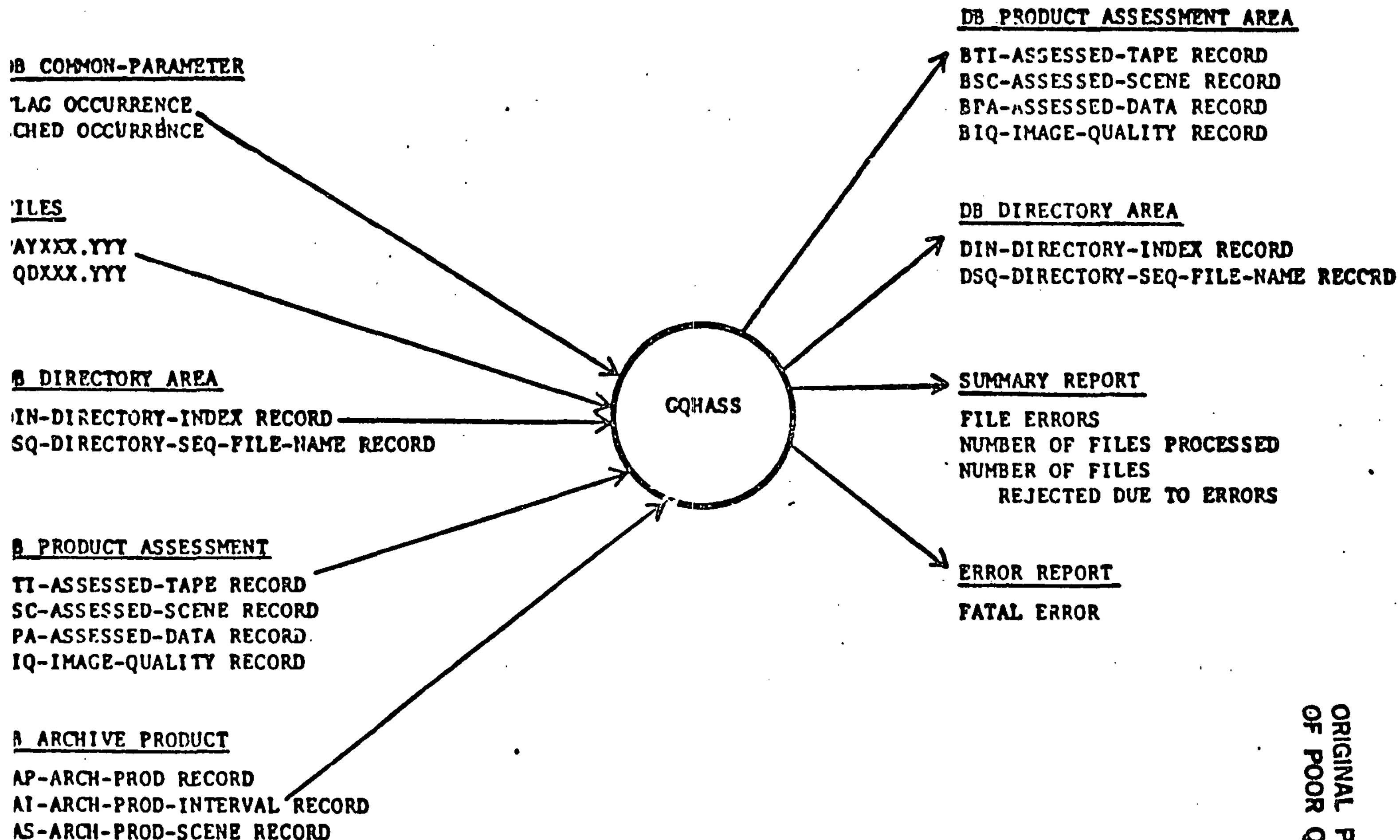

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Figure 11.4-2. GQHASS Data Flow

from the BIQ/BPA record falls within the AAS scene start/stop times. When such an AAS record is found, the proper SCENE-ID is then known and the BIQ/BPA record can be relinked under the proper BSC scene record.

During the course of processing, all IQDXXX and PAYXXX file names which are successfully processed are transferred from the CURINX directory to the DELINX directory, and a summary report is generated which lists all significant actions which occurred during the execution of the program.

GQHASS can be implemented by keying either of the following statements:

a. Take GQHASS.CMD (for interactive processing)

b. @SUBMIT GQHASS.CTL (for batch processing).

CONTENTS OF GQHASS.CMD "TAKE" FILE

```
GQHASS.CMD

     Delete GQHASS.SUM
     Delete GQHASS.UIL
     Delete GQHASS.PLG
     Run GQHASS
     Print GQHASS.SUM
     Print GQHASS.UIL
     Print GQHASS.PLG
```

CONTENTS OF GQHASS.CTL "SUBMIT" FILE

```
GQHASS.CTL
```

@Delete GQHASS.SUM

@Delete GQHASS.UIL

@Delete GQHASS.PLG

@Run GQHASS

@Print GQHASS.SUM

@Print GQHASS.UIL

@Print GQHASS.PLG

CONTENTS OF GQHASS-ERR.CMD "TAKE" FILE

GQHASS.ERR

Print GQHASS.*.

11.4.2.4.1 Input

GQHASS requires the following files for input:

a. Image Quality Data Files (IQDXXX.YY)

b. HDT Quality Data files (PAYXXX.YYY).

Data Base Files

GQHASS requires the following data base files as inputs:

a. Common parameter

b. Directory

c. Archive product

d. Product assessment.

11.4.2.4.2 Outputs

The GMS HDDR product assessment entry program (GQHASS) produces several types of outputs.

a. Summary report file

b. Updated data base files.

11.4.2.4.2.1 Operator Displays

The end of processing message is the only message that will be displayed to operator.

11.4.2.4.2.2 Files

As part of its processing functions, the following data bases are updated:

a. Directory

b. Product assessment.

GQHASS creates a scratch file during its processing and a summary processing report file (GQHASS) containing information about IQDXXX and PAYXXX files that are already processed. The summary report file is printed via the job control language.

11.4.2.4.3 Error Messages

Error messages generated by GQHASS are shown in Table 11.4-2.

11.4.2.5 Frequency of Operation

GQHASS is run automatically as part of the archive completion generation transaction.

11.4.2.6 Control Mechanism

Even though GQHASS is run automatically, the quality of the processing will be monitored by the production control specialist running the program. Hard copy

Table 11.4-?. Message/Action Matrix

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MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND					X
FATAL ERROR: THE SCHED OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND					X
FATAL ERROR: THE PRODUCT-ASSESSMENT IS EMPTY					X
FATAL ERROR: THE DIRECTORY NOT FOUND IN THE DATA BASE					X
FATAL ERROR: BTI RECORD NOT FOUND FOR BPA-IRIG-TIME:					X
FATAL ERROR: BTI RECORD NOT FOUND FOR BIQ-IRIG-TIME: _____					X
FATAL ERROR: THE SET AAP-AAI IS EMPTY					X
FATAL ERROR: THE SET AAI-AAS IS EMPTY, AAP-PROD-ID:					X
FATAL ERROR: SCENE NOT FOUND, IRIG TIME: _____					X
FATAL ERROR: BANDS PRESENT NOT FOUND FOR SCENE:					X
FATAL ERROR: BPA RECORD NOT FOUND USING DATA BASE KEY					X
FATAL ERROR: SCRATCH RECORD INFO MISMATCH BPA INFO					X
FATAL ERROR: BIQ RECORD NOT FOUND USING DATA BASE KEY					X
FATAL ERROR: SCRATCH RECORD INFO MISMATCH BIQ INFO					X
FATAL ERROR: SCENE VIDEO TIME NOT MATCH SCRATCH IRIG TIME:					X
FATAL ERROR: _____				X	X
ERROR: THE FILE IS EMPTY			X	X	

Table 11.4-2. Mess /Action Mat (Cont'd)

ORIGINAL PAGE IS
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MESSAGE	NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
ERROR: INVALID HEADER RECORD TYPE:_____			X	X	
ERROR: THE SENSOR OF THE TAPE ID DOES NOT MATCH WITH THE DB SENSOR			X	X	
ERROR: INVALID TAPE ID, ONLY HDT IS VALID HERE			X	X	
ERROR: INVALID HDT-ID-_____			X	X	
ERROR: INVALID PROCESSING TIME - _____			X	X	
ERROR: INVALID INPUT DATA SOURCE:_____FOR CURRENT WORK STATION			X	X	
ERROR: INVALID INPUT TAPE ID FOR WORK STATION: "HDT":_____			X	X	
ERROR: THE INPUT 'TAPE' IS SUPPOSED TO BE BLANK IN WORK STATION "HDT"			X	X	
ERROR: INVALID HDDR DRIVE NUMBER:_____			X	X	
ERROR: INVALID DATA RATE:_____			X	X	
ERROR: INVALID STRING ID_____FOR WORK STATION_____			X	X	
ERROR: INVALID GEOMETRIC ACROSS TRACK RATE BIAS VALUE:_____			X	X	
ERROR: INVALID GEOMETRIC ACROSS TRACK RATE BIAS QUALITY:_____			X	X	
ERROR: INVALID GEOMETRIC YAW BIAS VALUE:_____			X	X	
ERROR: INVALID GEOMETRIC YAW BIAS QUALITY:_____			X	X	
ERROR: INVALID GEOMETRIC YAW RATE BIAS VALUE: _____			X	X	
ERROR: INVALID GEOMETRIC YAW RATE BIAS QUALITY:_____			X	X	
ERROR: INVALID GEOMETRIC RADIAL BIAS VALUE:_____			X	X	

Table 11.4-2. Message/Action Ma[illegible] (Cont'd)

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[illegible]CORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
[illegible]R [illegible]NT'D)	ERROR: INVALID GEOMETRIC RADIAL RATE BIAS VALUE:			X	X	
	ERROR: INVALID GEOMETRIC RADIAL RATE BIAS QUALITY:			X	X	
	ERROR: INVALID MEAN X OFFSET OF CONTROL POINTS USED:_____			X	X	
	ERROR: INVALID MEAN X OFFSET OF CONTROL POINTS USED:_____			X	X	
	ERROR: INVALID TOTAL NUMBER OF EPHEMERIS POINTS:_____			X	X	
	ERROR: INVALID NUMBER OF REJECTED EPHEMERIC POINTS:_____			X	X	
	ERROR: INVALID ACCURACY EPHEMERIS FIT, X:_____			X	X	
	ERROR: INVALID ACCURACY EPHEMERIS FIT, Y:_____			X	X	
	ERROR: INVALID CAL WEDGE STANDARD DEVIATION (NO.):_____			X	X	
	ERROR: MEAN CAL WEDGE, INVALID DETECTOR X GAIN (NO:_):			X	X	
	ERROR: MEAN CAL WEDGE, INVALID DETECTOR X OFFSET (NO:_):			X	X	
	ERROR: INVALID MEAN CAL WEDGE OF PIXEL (NO:_):_____			X	X	
	ERROR: INVALID STANDARD DEVIATION CAL WEDGE OF PIXEL (NO:):			X	X	
	ERROR: INVALID MEAN HISTOGRAM OF PIXEL (NO:_):___			X	X	
	ERROR: INVALID STANDARD DEVIATION HISTOGRAM OF PIXEL (NO:___)			X	X	
	ERROR: INVALID MEAN X OFFSET OF CORRELATED CONTROL POINTS:			X	X	
	ERROR: INVALID MEAN Y OFFSET OF CORRELATED CONTROL POINTS:			X	X	
	ERROR: INVALID GEOMETRIC ALONG TRACK BIAS VALUE:_____			X	X	

Table 11.4-2. Me ge/Action Matrix (Cont'd)

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GORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
OR (CONT'D)	ERROR: INVALID GEOMETRIC ALONG TRACK RATE BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK BIAS QUALITY:_____			X	X	
	ERROR: INVALID SAMPLE TYPE:_____			X	X	
	ERROR: SCENE SAMPLE TYPE IS NOT FOR SUBSYSTEM OF ORIGIN "DRRTS"			X	X	
	ERROR: INVALID PROCESSING MODE_____, IN OR OT (OUT) EXPECTED			X	X	
	ERROR: SCENE RECORDS NOT FOUND			X	X	
	ERROR: SCENE-ID NOT EXPECTED FROM FILE FROM DRRTS			X	X	
	ERROR: INVALID PROCESS USING HDT:_____FOR SUBSYSTEM DRRTS			X	X	
	ERROR: INVALID SCENE RECORD TYPE:_____			X	X	
	ERROR: INVALID SCENE ID_____			X	X	
	ERROR: INVALID IRIG TIME_____			X	X	
	ERROR: INVALID NUMBER OF CORRECTED ERROR COUNT:_____			X	X	
	ERROR: INVALID INTERVAL SEQUENCE NUMBER:_____			X	X	
	ERROR: INVALID SPACECRAFT TIME OF FAULT:_____			X	X	
	ERROR: INVALID MAJOR FRAME SYNCHRONOUS LOSS:_____			X	X	
	ERROR: INVALID MINOR FRAME SYNCHRONOUS FAULT:_____			X	X	
	ERROR: INVALID MINOR FRAME SYNCHRONOUS LOSS:_____			X	X	

Table 11.4-2. Message/Action Ma[illegible]x (Cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

[illegible]ORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
[illegible]R [illegible]T'D)	ERROR: INVALID ACCURACY EPHEMERIS FIT, Z:_____			X	X	
	ERROR: INVALID TOTAL NUMBER OF ATTITUDE POINTS:_____			X	X	
	ERROR: INVALID NUMBER OF REJECTED ATTITUDE POINTS:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT X:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT Y:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT Z:_____			X	X	
	ERROR: INVALID LINE LENGTH MEAN:_____			X	X	
	ERROR: INVALID LINE LENGTH STANDARD DEVIATION:_____			X	X	
	ERROR: 5 SECOND PULSE SAMPLE SAMPLE TYPE DO NOT COME FROM MIPS/TIPS			X	X	
	ERROR: INVALID NUMBER OF SCENES:_____			X	X	
	ERROR: INVALID PROCESS USING HDT:_____FROM SUBSYSTEM "MIPS/TIPS"			X	X	
[illegible]NG:	WARNING: FAIL TO ADD FILE TO DELINX-	X				
	WARNING: FAIL TO DELETE FILE FROM CURINX	X				
	WARNING: VIDEO INFORMATION IS NOT YET AVAILABLE FOR THIS HDT	X				
[illegible]ATION	INFO: DUMMY BSC-ASSESSED-SCENE RECORD CREATED	X				
	INFO: NO BPA-ASSESSED-DATA IN DUMMY BSC-ASSESSED-SCENE	X				
	INFO: NO BIQ-IMAGE-QUALITY IN DUMMY BSC-ASSESSED-SCENE	X				

Table 11.4-2. Messa[illegible]ction Mat[illegible] (Cont'd)

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ORIGINAL PAGE IS OF POOR QUALITY

[illegible]ORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
[illegible]ATION [illegible]'D)	INFO: TOTAL NUMBER OF FILES PROCESSED:____	X				
	INFO: INTERVAL FOR THIS IMAGE PULSE HAS NOT BEEN INVERTED	X				
[illegible]S	GQHASS - END OF PROCESSING	X				

printouts are to be reviewed for abort and error messages and appropriate action taken. Error messages should be reviewed with the MMF systems analyst.

11.4.2.7 Record Keeping and Information Dissemination

After reviewing all hard copy printouts, the production control specialist is responsible for entering these printouts in their respective program binders.

11.4.3 GMS MIPS ARCHIVE GENERATION FEEDBACK VERIFICATION (GPIAFV) - COMPUTER PROGRAM DESIGN SPECIFICATION (CPDS) LSD-MMF-CPD-2053

11.4.3.1 Unit Description and Purpose

The MIPS archive generation feedback verification program is a GMS activity which determines if there are any MIPS archive generation feedback files which require processing. The program extensively verifies all such feedback files, performs quality assessment checks on the imagery, and creates feedback, directory, and CHIT scratch files.

The archive generation, feedback process GPIAFV, runs automatically as part of the archive completion generation transaction. It can also be run manually by the operator. This module verifies the files pertaining to R to A feedback and creates scratch files to be applied to the data base.

11.4.3.2 Input Description

Operator inputs are supplied only when GPIAFV is run in manual mode, and are in the form of responses to program prompts.

GPIAFV requires the following data base files as inputs, regardless of the operational mode:

a. Archive/product

b. Common parameter

c. Directory

d. Error text

e. Product assessment.

In the manual mode, the production control specialist implements GPIAFV via KCRT and enters the information supplied to him by the data processing planner.

Data flow through GPIAFV is shown in Figure 11.4-3.

11.4.3.3 Output Description

The archive generation feedback process produces two types of outputs: operator displays (only when GPIAFV is run in manual mode) and updated data base files and newly created scratch files, with data to be applied to the data base.

11.4.3.3.1 Operator Displays

These are detailed in Figure 11.4-3.

11.4.3.3.2 Files

GPIAFV updates the directory data base file as part of its processing function, with additions and deletions of file names to the current and delete directory indexes.

GPIAFV creates several scratch files as well. These files have the names ADSXXX.ext, APRXXX.ext, AGSXXX.ext, and AFSXXX.ext, where 'XXX' is a sequence number ranging from 1 to 999 and 'ext' is an extension of GTB (GPIAFV to be continued).

GPIAFV will also create a summary processing report file (GPIAFV.SUM) and a user interaction log file (GPIAFV.UIL). The summary report file summarizes the processing completed by GPIAFV, while the user interaction log file details the operator prompts and responses. These report files are printed via the job control language (see paragraph 11.4.3.5.2.1).

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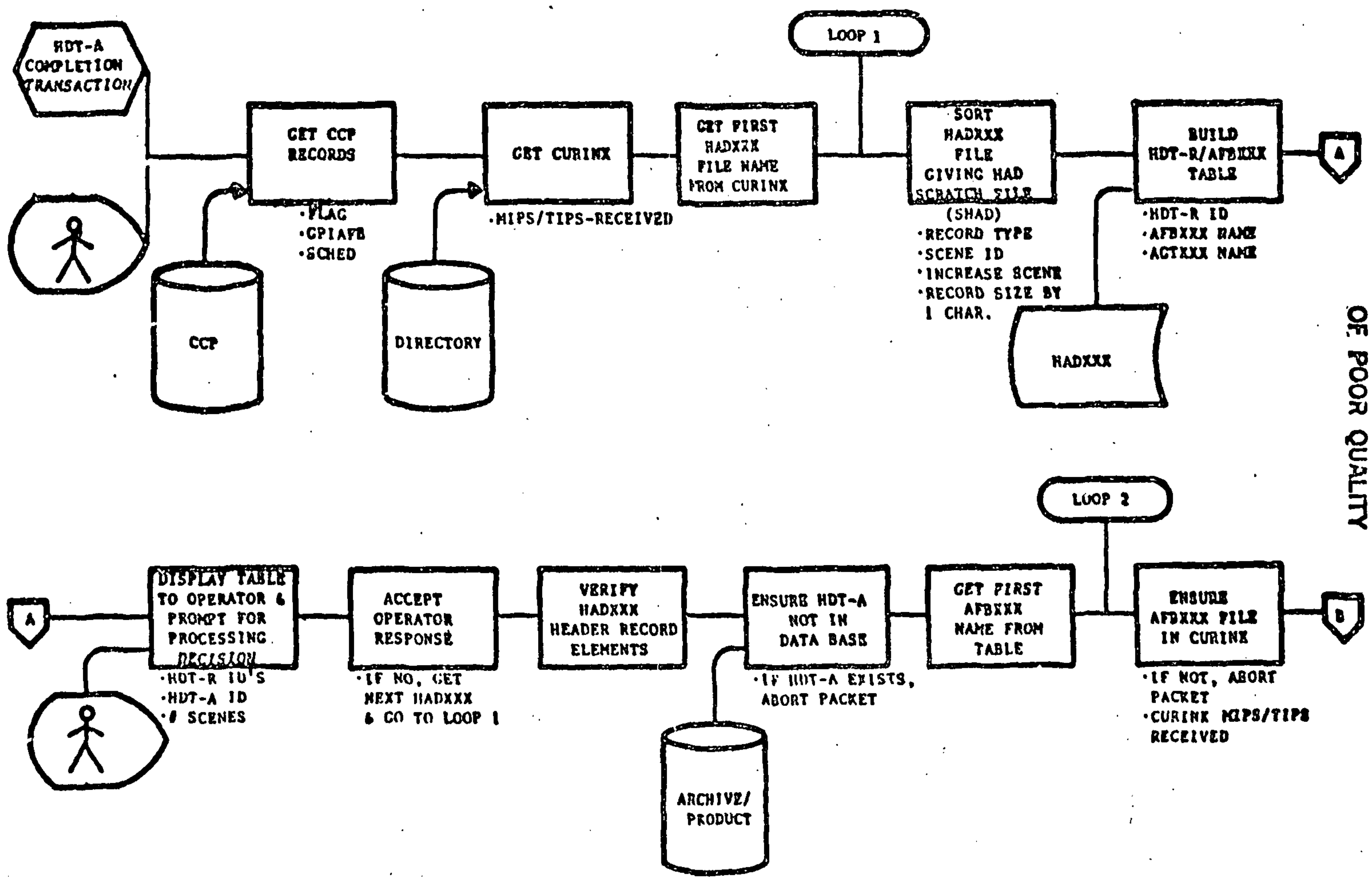

Figure 11.4-3. MIPS/TIPS Archive Generation Feedback Verification (GPIAFV) Program Flow Diagram

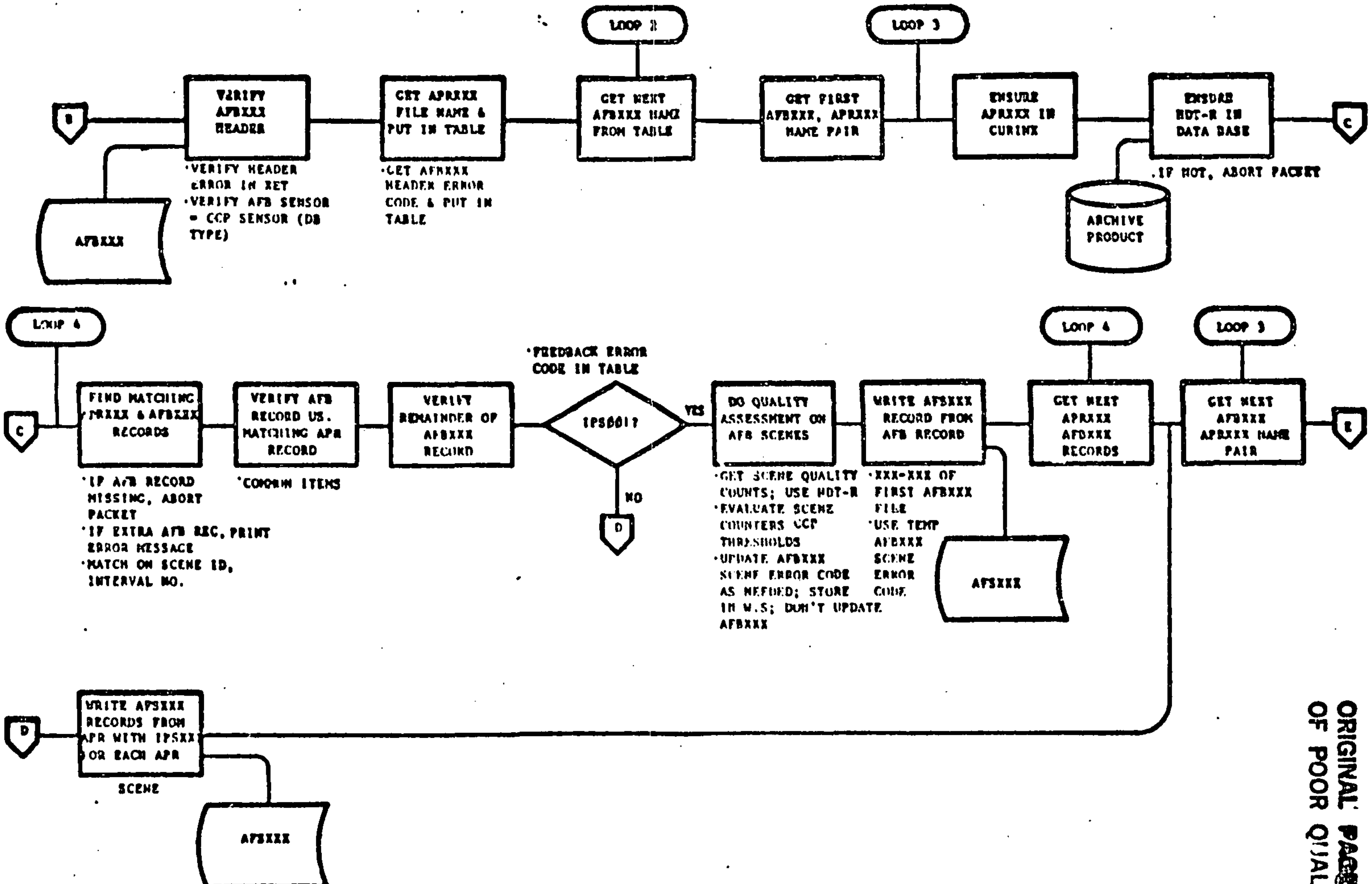

Figure 11.4-3. MIPS/TIPS Archive Generation Feedback Verification (GPIAFV) Program Flow Diagram (Continued)

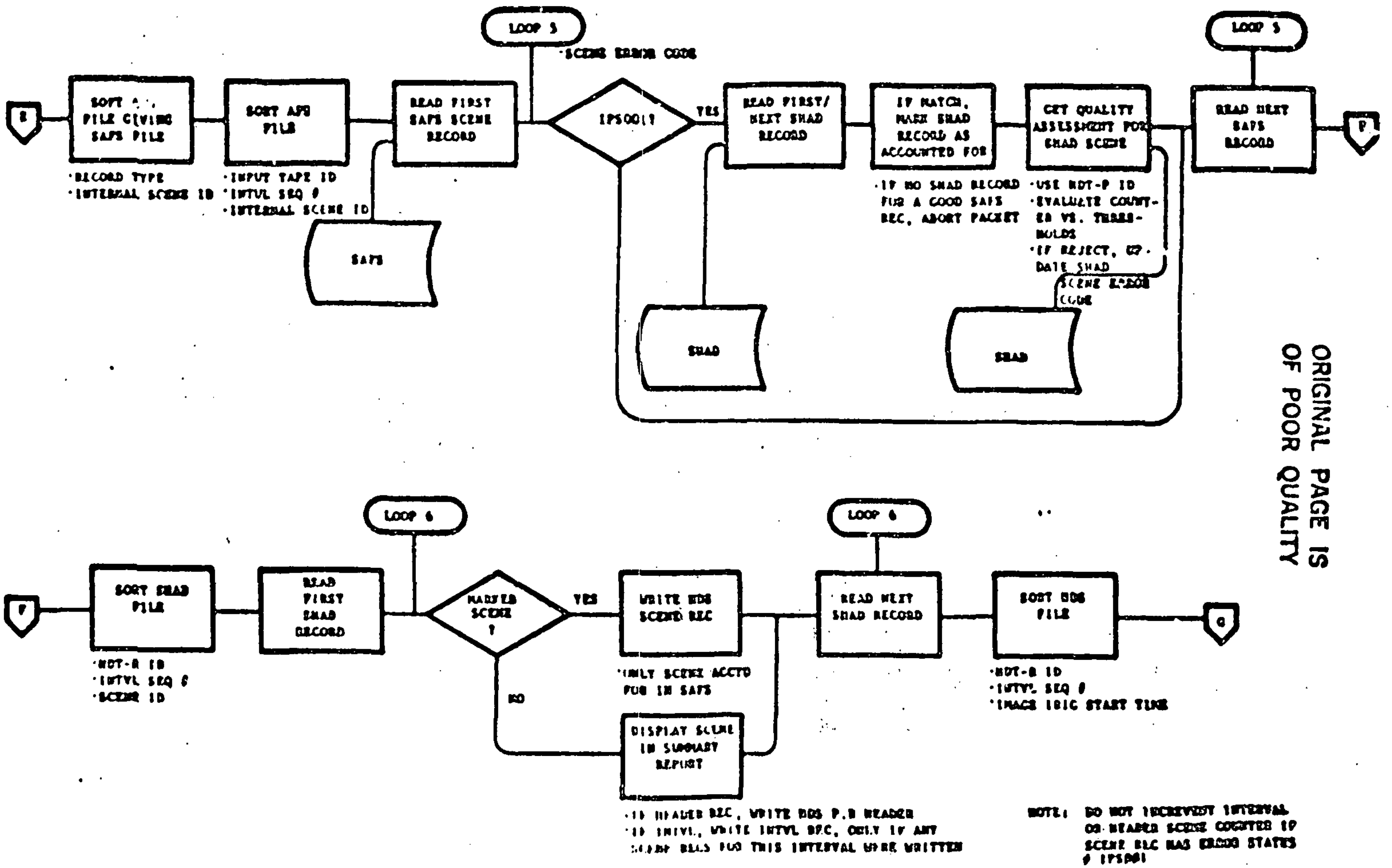

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Figure 11.4-3. MIPS/TIPS Archive Generation Feedback Verification (CPIAFV) Program Flow Diagram (Continued)

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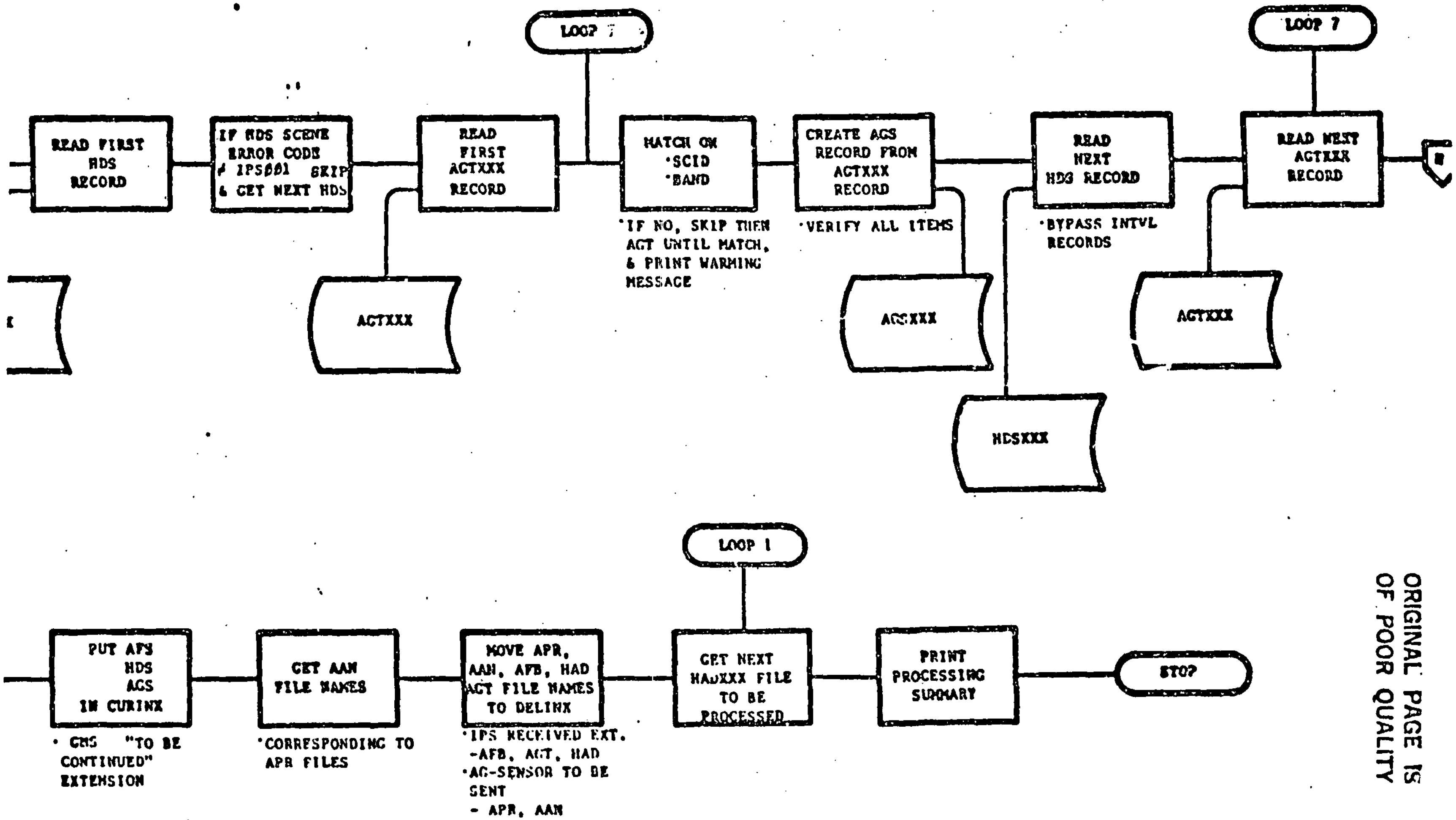

Figure 11.4-3. MIPS/TIPS Archive Generation Feedback Verification (CPIAFV) Program Flow Diagram (Continued)

11.4.3.4 Frequency of Operation

When run automatically as part of the archive completion generation transaction, GPIAFV runs nine times during an eight-hour work period.

11.4.3.5 Detailed Operational Sequences

11.4.3.5.1 Functional Summary

This module uses the archive generation process request file (APR), the archive generation feedback file (AFB), the HDT-A directory file (HAD) and the GHIT data file (AGT) in an extensive verification process. During the verification procedure, quality assessment checks are made on the HDT-R and HDT-A scenes as well. More than one process request may be handled in producing a single HDT-R. MIPS tabulates all the process requests which produced a particular HDT-A in the packet directory file. The main driver for this module is the directory called "MIPS received," since processing is attempted for every archive generation feedback file group received from MIPS in response to a process request. The extent and type of processing is dependent upon four major factors:

a. The process request error code

b. The process request mode - production or engineering

c. Operator selection (if common parameters indicate the processing mode to be manual)

d. The existence of the necessary feedback and process request files.

These four factors determine whether special processing should take place or certain processing steps should be skipped for each feedback file. If, however, a feedback file group is to be processed normally, the following five main activities are required:

a. Building the archive generation feedback scratch file (AFS)

b. Performing quality assessment on the feedback (AFS) scenes

c. Building the HDT-A directory scratch file (HDS)

d. Performing quality assessment on the directory (HDS) scenes

e. Building the GHIT data scratch file (AGS).

Building the archive generation feedback scratch file (AFS) requires verifying both the archive generation feedback file (AFB) and the corresponding archive generation process request file (APR), and merging them. Error information is accumulated for each interval and a decision is made concerning the appropriate interval action. The decision is based upon the ratio computed for scenes with various error codes and its relation to thresholds set in the common parameters area. The four decisions are:

a. Accept

b. Rework

c. Cancel

d. Retransmit.

Performing quality assessment checks on the AFS scenes requires accessing the product assessment area of the data base. Separate error counters are maintained for HDT-R scene in, HDT-R scene out, cumulative scene, HDT-R in,

HDT-R out and cumulative HDT-R. These counters are then compared to threshold values located in the common parameters area of the MMF data base and, based upon the result of the comparisons, the AFS scene(s) are statused as accepted or requiring retransmittal.

Building the HDT-A directory scratch file (HDS) requires verifying the HDT-A directory file (HAD) and comparing it with the AFS file previously generated. It is necessary to insure that there exist HDS scene records for every AFS record which has a good status (error code = ´IPSØØ1´) and appears on an "accept"ed interval. These records are in turn represented in the HDS file. If HAD scene records are missing, the feedback file group is aborted.

Quality assessment checks for the HDS scenes also require accessing the product assessment area of the data base. In this process, however, error counters are maintained for HDT-A scene out, cumulative scene, and cumulative HDT-A. These counters are compared to threshold values located in the common parameters area, and on the basis of this comparison, the scene is accepted or statused for rework.

Building the GHIT data scratch file (AGS) requires verifying the GHIT data file (AGT) and comparing it with the HDS file previously generated. If scenes represented in the HDS file do not have corresponding entries in the AGT file, the feedback file group is aborted.

If the verification processes are completed without error, the scratch files which were generated are placed in the CURINX directory "GMS to be continued."

If the program was being run in the "engineering" mode, these scratch files are deleted instead.

The processing summary is created which will show which files were processed and to what extent. It will also include any error messages associated with the processing.

11.4.3.5.2 Input

a. Processing mode which indicates whether the program is to be run in an automatic or manual mode. This is derived from information in the common parameter area of the Landsat-D MMF data base.

b. Processing indicators which determine if an HDT-A directory file and corresponding feedback files (e.g., a feedback file group) are verified and used to generate the various feedback scratch files. This information may either be input at a terminal or derived from information in the common-parameter area of the Landsat-D MMF data base.

c. Archive generation process request file (APR) - each file represents a process request and is sent to IPS with interval data for HDT-R to HDT-A processing

d. Archive generation feedback files (AFB) - files returned from MIPS to GMS in answer to archive generation process request files.

e. HDT-A directory files (HAD) - files sent from MIPS to GMS containing information about the generated HDT-A tapes after HDT-R to HDT-A processing.

f. GHIT data files (AGT) - files sent from MIPS to GMS containing GHIT data after HDT-R to HDT-A processing.

g. Ancillary data files (AAN) - files containing ancillary data needed by MIPS for HDT-R to HDT-A processing.

11.4.3.5.2.1 Job Control Language (JCL)

GPIAFV can be implemented by keying either of the following statements:

a. @TAKE GPIAFV.CMD (for interactive processing)

b. @SUBMIT GPIAFV.CTL (for batch processing).

11.4.3.5.2.2 Contents of GPIAFV.CMD "TAKE" File

```
@RUN GPIAFV
@PRINT GPIAFV.SUM
@PRINT GPIAFV.UIL
```

11.4.3.5.2.3 Contents of GPIAFV.CTL "SUBMIT" File

GPIAFV.CTL

```
@DELETE GPIAFV.SUM
@RUN GPIAFV
@PRINT GPIAFV.SUM
```

11.4.3.5.3 Output

Output consists of:

a. HDT-A packet directory scratch files which contain verified HDT-A archive product, interval and scene record information (one file per HDT-A).

b. Archive generation feedback scratch files which contain verified MIPS processing information for the HDT-R input used in generating the HDT-A (one or more files per HDT-A).

c. GHIT data scratch files which contain verified GHIT information corresponding to a single HDT-A (one file per HDT-A).

d. Processing summary file which identifies those HDT-A packet directory, archive generation feedback, and GHIT data files processed (and to what extent) and the error messages associated with the processing.

11.4.3.5.3.1 Processing Messages

Several types of messages can result from processing; they can have a variety of forms, such as operator displays and processing summary messages. Generally, the messages will be one of the following types:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator actions.

b. Warning.

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 11.4-3).

Table 11.4-3. Messag ction Mat

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EGORY	MESSAGE	DO NOT RERU.. GPIAFV	VERIFICATION ERRORS-CORRECT INPUT DATA & RERUN GPIAFV	INPUT DATA TO GPIAFV AS PROMPTED	FORWARD OUTPUT TO DATA BASE ADMINIS-TRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	NO ACTION
AL	FATAL ERROR: UNABLE TO FIND COMMON PARAM < > RECORD	X			X	X	
	FATAL ERROR: UNABLE TO FIND PRODCT ASSMNT ASSESSED-SCENE RECORD	X			X	X	
	FATAL ERROR: UNABLE TO FIND DIRECTORY INDEX RECORD	X			X	X	
	FATAL ERROR: DIRECTORY INDEX BEING PROCESSED CONTAINS NO FILE NAMES	X			X	X	
	FATAL ERROR: UNABLE TO FIND ERROR TEXT RECORD	X			X	X	
	FATAL ERROR; UNEXPECTED END OF FILE ON <FILENAME>	X			X		
	FATAL ERROR: NO SCENE RECORDS FOUND IN <FILENAME>	X			X		
	FATAL ERROR: HDT-A SENSOR TYPE DOES NOT MATCH DATABASE SENSOR TYPE	X			X	X	
ROR	ERROR: THE CURRENT HDT-A DIRECTORY FILE IS EMPTY. FILE NAME IS ___	X				X	
	ERROR: THE CURRENT ARCHIVE GENERATION PROCESS REQUEST FILE IS EMPTY	X				X	
	ERROR: THE CURRENT ARCHIVE GENERATION FEEDBACK FILE IS EMPTY	X				X	
	ERROR: THE FILE HAS INVALID OR MISSING RECORD (FILE/RECORD)	X				X	
	ERROR: INVALID RECORD TYPE		X			X	
	ERROR: THIS FILE NOT IN CURINX DIRECTORY	X			X	X	
	ERROR: UNABLE TO FIND ARCHIVE PRODUCT RECORD FOR HDT-R ID	X			X	X	
	ERROR: HDT-A ID OF THIS HDT-A PACKET ALREADY EXISTS IN DATABASE	X			X	X	
	ERROR: INVALID <FIELD NAME> <FIELD VALUE>		X				
	ERROR: NOT ENOUGH SCENES IN THE FEEDBACK FILE FOR INTERVAL <NUMBER>		X				
	ERROR: NOT ENOUGH INTERVALS IN THE FEEDBACK FILE FOR INTERVAL <NUMBER>		X				

Table 11.4-3. Message/Action Matrix (Cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

GORY	MESSAGE	DO NOT RERUN GPIAFV	VERIFICATION ERRORS-CORRECT INPUT DATA & RERUN GPIAFV	INPUT DATA TO GPIAFV AS PROMPTED	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	NO ACTION
R	ERROR: <FIELDNAMES> DO NOT MATCH. THE VALUES ARE <FIELDVALUES>		X				
	ERROR: THE SORTED HDT-A SCENE RECORD IS MISSING FOR MATCHING SORTED						
	FEEDBACK SCENE.. THE INTERNAL SCENE ID IS <NUMBER>		X				
	ERROR: MISSING < > RECORD IN SORTED HDT-A FILE		X				
	ERROR: THE LOGICAL HDT-A TAPE ID IN HDT-A SCENE HAS NO MATCH IN		X				
	HDT-A HEADER						
	ERROR: INVALID RESPONSE___VALID ENTRIES ARE Y AND N ONLY			X			
ING	WARNING. <FIELDNAMES> DO NOT MATCH. THE VALUES ARE <FIELDVALUES>		X				
	WARNING: TOO MANY SCENES IN THE FEEDBACK FILE FOR INTERVAL NUMBER< >		X				
	WARNING: TOO MANY INTERVALS IN THE FEEDBACK FILE. EXTRA INTERVAL IS< >		X				
	WARNING: EXTRA SORTED HDT-A FILE SCENE RECORD. INTERVAL SCENE ID		X				
	IS< >						
	WARNING: TOO MANY HDT-A CHIT RECORDS. INTERNAL SCENE ID/BAND ID		X				
ATION	INFO: OPERATOR REQUESTED TERMINATION OF PROCESSING GPIAFV PROGRAM						X
	INFO: OPERATOR REQUESTED TERMINATION OF PROCESSING THE PACKET<FILENAME>						X
	INFO: PROCESSING DISCONTINUED DUE TO VERIFICATION ERRORS ON FILE						X
	<FILENAME>						
	INFO: PROCESSING STOPPED ON THE HDT-A PACKET FILE <FILENAME>						X
	INFO: PROCESSING SUCCESSFULLY COMPLETED FOR HDT-A PACKET FILE						X

Table 11.4-3. Messag tion Mat (Cont'd)

CATEGORY	MESSAGE	DO NOT RERUN GPIAFV	VERIFICATION ERRORS-CORRECT INPUT DATA & RERUN GPIAFV	INPUT DATA TO GPIAFV AS PROMPTED	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	NO ACTION
)RMATION	INFORMATION: BEGIN VERIFICATION OF THE DIRECTORY HEADER OF HDT-A FILE						X
	INFORMATION: BEGIN VERIFICATION OF THE FEEDBACK FILE						X
	INFORMATION: BEGIN COMPARISON OF THE PROCESS REQUEST FILE & FEEDBACK FILE						X
	INFORMATION: BEGIN VERIFICATION OF THE HDT-A CHIT FILE						X
	INFORMATION: BEGIN COMPARISON OF THE SORTED FEEDBACK SCRATCH FILE &						X
	SORTED HDT-A FILE						
	INFO: THE HDT-A SCENE EXISTS FOR ERROR-CODED FEEDBACK SCENE						X
	INFORMATION: BEGIN VERIFICATION OF THE SORTED HDT-A FILE						X
	INFO: QUALITY ASSESSMENT ERROR OCCURRED FOR HDT/SCENE						X
:R	GPIAFV - END OF PROCESSING	X					X
	DO YOU WISH TO PROCEED WITH THE GPIAFV PROGRAM (Y/N)?			X			
	THE FILE TO BE PROCESSED IS: <FILE INFO> DO YOU WISH TO PROCESS THIS			X			
	FILE (Y/N)?						

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c. Error

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 11.4-3).

d. Fatal Errors.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 11.4-3).

e. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general infomation and require no operator action.

11.4.3.6 Record Keeping and Information Dissemination

All of the printouts should be reviewed by the production control specialist who ran GPIAFV and he should take action if any "aborts" or error conditions are disclosed. After reviewing the printouts, the production control specialist should file the hard copies in their respective binders.

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Revision A
16 July 1982

11.4.4 GMS ARCHIVE ITEM CLOSEOUT (GPARCO) COMPUTER DESIGN SPECIFICATION NUMBER (CPDS) LSD-MMF-CPD-2046

11.4.4.1 Unit Description and Purpose

GPARCO creates permanent entries, in the main image area of the MMF-M data base, of scenes processed to A-tape; it matches these entries against corresponding scene acquisition requests and closes out the archive request for scenes that were successfully acquired.

GPARCO is normally run automatically as part of the archive completion generation transaction. If required, it can also be run manually via operator interaction.

GPARCO processes all product acquisition request records in the data base having a status of "archive to be closed out" (ACT).

11.4.4.2 Unit Input Description

In both operating modes, manual and automatic, GPARCO requires the following MMF-M data base files for input:

a. Common parameter

b. Archive/product

c. Production

d. Main image

e. GHIT.

When run manually, GPARCO is implemented by the MMF-M production control

specialist who utilizes the JCL shown in paragraph 11.4.4.5.3. Data flow through GPARCO is shown in Figure 11.4-4.

11.4.4.3 Unit Output Description

GPARCO updates several data base areas as part of its processing function. With normal processing, GPARCO updates the following data base files:

a. Archive/product

b. Production

c. Main image.

In the case of abnormal processing the data base areas are not updated.

GPARCO also creates a summary processing report file (GPARCO.SUM), which summarizes the processing completed by GPARCO.

11.4.4.4 Frequency of Operation

When run automatically as part of the archive completion generation transaction, GPARCO runs nine times during an eight-hour work period.

11.4.4.5 Detailed Operational Sequences

11.4.4.5.1 Functional Summary

The archive item close out process is run periodically as part of the archive completion generation transaction. This process may also be initiated by an operator on an as-required basis. GPARCO processes all product acquisition request records in the data base having a status of "archive-to-be-closed-out" (ACT). For each product request, a main image record is created in temporary

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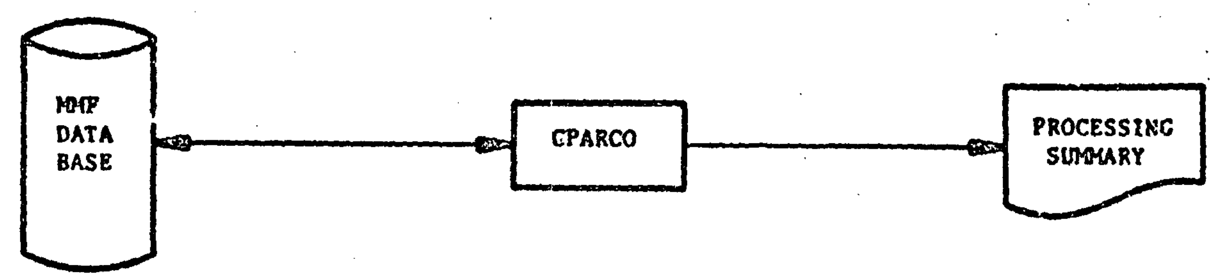

Figure 11.4-4. GMS Archive Item Close Out Flow Diagram

storage. Using the scene's path number, row number, days-since-launch, sensor and mission number, the corresponding scene record is retrieved from the GHIT area of the data base. The corresponding GHIT image header record is then retrieved to obtain the band information. The GHIT data is utilized to update the main image record with the NASA scene identification, sun elevation and azimuth, latitude and longitude, ephemeris type, data source and bands acquired indicator.

When all image header records have been processed the main image record is complete. This record then undergoes exhaustive verification. First, the main image record is verified for format and content. Each field is checked for allowable values and, where appropriate, the range of permissible values is also checked. Second, the corresponding archive product record is retrieved from the data base using the HDT-A tape identification stored in the main image record. The archive product scene records are then searched for an entry matching the main image record using the following fields: path number, row number, days-since-launch, sensor type and mission number. The main image record and matching archive product scene record are then checked for consistency. The third phase of verification is initiated once consistency has been verified. In this phase, the existing main image records are searched to determine if there have been any matching main image records recently created. The fields used for comparison purposes are the path and row, days-since-launch, and mission number. Should a matching main image record be found, the cloud cover assessments are accumulated.

When all verifications have been successfully completed, the new main image record is stored in the data base. The newly stored record is linked to the appropriate WRS and acquisition date entries. The acquisition request entry that was used in creating the new main image record is updated with the date and time of the main image record creation, and its status is changed to "user-order-to-be-closed-out" (UOC).

Should the verification be unsuccessful, the main image record is not stored in the data base. An error code is stored in the acquisition request record used in creating the main image record. Furthermore, the corresponding archive product scene record is updated with the same error code to reflect that the scene is unavailable. Finally, the acquisition request record is given a status of "cancel" (CAN).

When all acquisition request records have been processed, a processing summary listing will be output. The listing will detail the scenes added to the main image area of the data base, those scenes failing verification (and why), and those acquisition requests which were cancelled.

11.4.4.5.2 Resource Allocation

Core Memory: System Default

Decnet Files: None

Data Base:

a. Archive/product area - access privilege is protected update

b. Main image area - access privilege is protected update

c. Common parameter area - access privilege is retrieval

d. Production area - access privilege is protected update

e. GHIT area - access privilege is retrieval.

Disk Files:

a. Processing Summary Report - GPARCO.SUM

b. User Interaction Log - GPARCO.UIL.

11.4.4.5.3 Job Control Language (JCL)

GPARCO can be implemented by keying either of the following statements:

a. @TAKE GPARCO.CMD (for interactive processing)

b. @SUBMIT GPARCO.CTL (for batch processing).

11.4.4.5.3.1 Contents of GPARCO.CMD "TAKE" File

GPARCO.CMD

```
@DELETE GPARCO.SUM
@DELETE GPARCO.UIL
@RUN GPARCO
@PRINT GPARCO.SUM
@PRINT GPARCO.UIL
```

11.4.4.5.3.2 Contents of GPARCO.CTL "SUBMIT" File

GPARCO.CTL

```
@DELETE GPARCO.SUM
@DELETE GPARCO.UIL
@RUN GPARCO
```

@PRINT GPARCO.SUM

@PRINT GPARCO.UIL

11.4.4.5.4 Processing Messages

Several types of messages can result from processing; they can have a variety of forms, such as operator displays and processing summary messages. The messages will be one of the following types:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action.

b. Warning.

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 11.4-4).

c. Error.

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 11.4-4).

d. Fatal Errors.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point

Table 11.4-4. Message/Action Matrix

CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN GPARCO	PRINT GPARCO.*	NONE	FORWARD OUTPUT TO DATA BASE ADMINISTRATION	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DBMS, UNSUCCESSFUL _______ OPERATION	X			X	
	FATAL ERROR: DISK, UNABLE TO _______ THE _______ FILE	X			X	X
	FATAL ERROR: DBMS, SEE SYSCOM ERROR STATUS	X				X
	FATAL ERROR: DISK, _______ PROCEDURE ERROR FOR FILE _______	X				X
	FATAL ERROR: _______ RECORD WAS NOT FOUND	X			X	X
	FATAL ERROR: FAILED TO MATCH AN _______ TO _______	X			X	
	FATAL ERROR: THERE WAS NO PPS-PROD-STATUS RECORD WITH STATUS = _______	X			X	
	FATAL ERROR: _______	X				X
ERROR	ERROR: INVALID _______ IN NEW MIA RECORD	X				X
	ERROR: _______					X
INFORMATION	INFORMATION: GPARCO ABORTED BY OPERATOR VIA CTRL-C KEY IN.			X		
	INFO: THE NEWLY CREATED MIA RECORD WAS NOT STORED IN THE DATA BASE			X		
	INFO: THE NEWLY CREATED MIA RECORD WAS STORED IN THE DATA BASE			X		
	INFO: A MIA RECORD IN THE DATA BASE WAS UPDATED WITH INFO FROM MATCHING PAQ REC.			X		
	INFO: _______			X		
OTHER	GPARCO: END-OF-PROCESSING			X		

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just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 11.4-4).

e. Other.

These messages are not prefixed witn any category definition such as "ERROR:", "INFORMATION:", etc. They describe general information and require no operator action.

11.4.4.6 Record Keeping and Information Dissemination

All printouts should be reviewed by the MMF-M production control specialist who ran GPARCO and he should consult with the MMF-M systems analyst if any aborts or error conditions are disclosed.

After reviewing the printouts the production control specialist should file the hard copies in their respective binders.

SECTION 12

PERFORMANCE EVALUATION PRODUCT GENERATION (PEPG) SCHEDULING

12.1 ENVIRONMENT/RESOURCES

PEPG is scheduled in MMF on the DEC2050 using the ground segment management subsystem (GMS) and the request support subsystem (RSS).

12.2 OVERVIEW/BACKGROUND

PEPG scheduling generates process requests for final products from MIPS or TIPS for use by QA. PEPG scheduling is performed after either standing order entry (RSSOEN) or retrospective order entry (RSROEN). After PEPG scheduling is complete, the final products are generated in MIPS or TIPS as appropriate.

The following products can be scheduled:

a. CCT-A

b. CCT-P

c. F241-A

d. F241-P

e. HDT-A Dump

f. Scene Dump

g. PE Reports.

PEPG scheduling utilizes the following assets:

HARDWARE	SOFTWARE
DEC2050 (MMF)	MMF Data Base
VAX 11/780 (MMF)	GPPGEN program
Decnet	GSSOPR program

OPLAN

12.3 FUNCTION DESCRIPTION

PEPG scheduling is normally an automatic process that begins after either standing order entry or retrospective order entry is complete. Figure 12-1 shows the respective flow paths. Enclosure 12-1 provides order entry formats. Enclosure 12-2 provides final product codes. Scheduling may be done manually by interactive terminal following operator prompts.

IMPORTANT NOTICE

> Retrospective order entry is the preferred method of PEPG because it does not affect the turnaround time of 'A' tapes. Standing order entry PEPG may cause the 48 hour turnaround time to be exceeded.

Standing order entry PEPG scheduling uses, as its input, user order requests generated by RSSOEN. The standing order processor (GSSOPR) program then generates product requests which are fed into the GMS production control final product process request generation (GPPGEN) program. GPPGEN generates final product process requests and schedules the appropriate MIPS/TIPS string to meet the request.

Retrospective order entry PEPG scheduling uses, as its input, product requests generated by RSROEN. The GMS production control final product process request generation (GPPGEN) program processes these product requests, generates final product process requests and schedules the appropriate MIPS/TIPS string to meet the requests.

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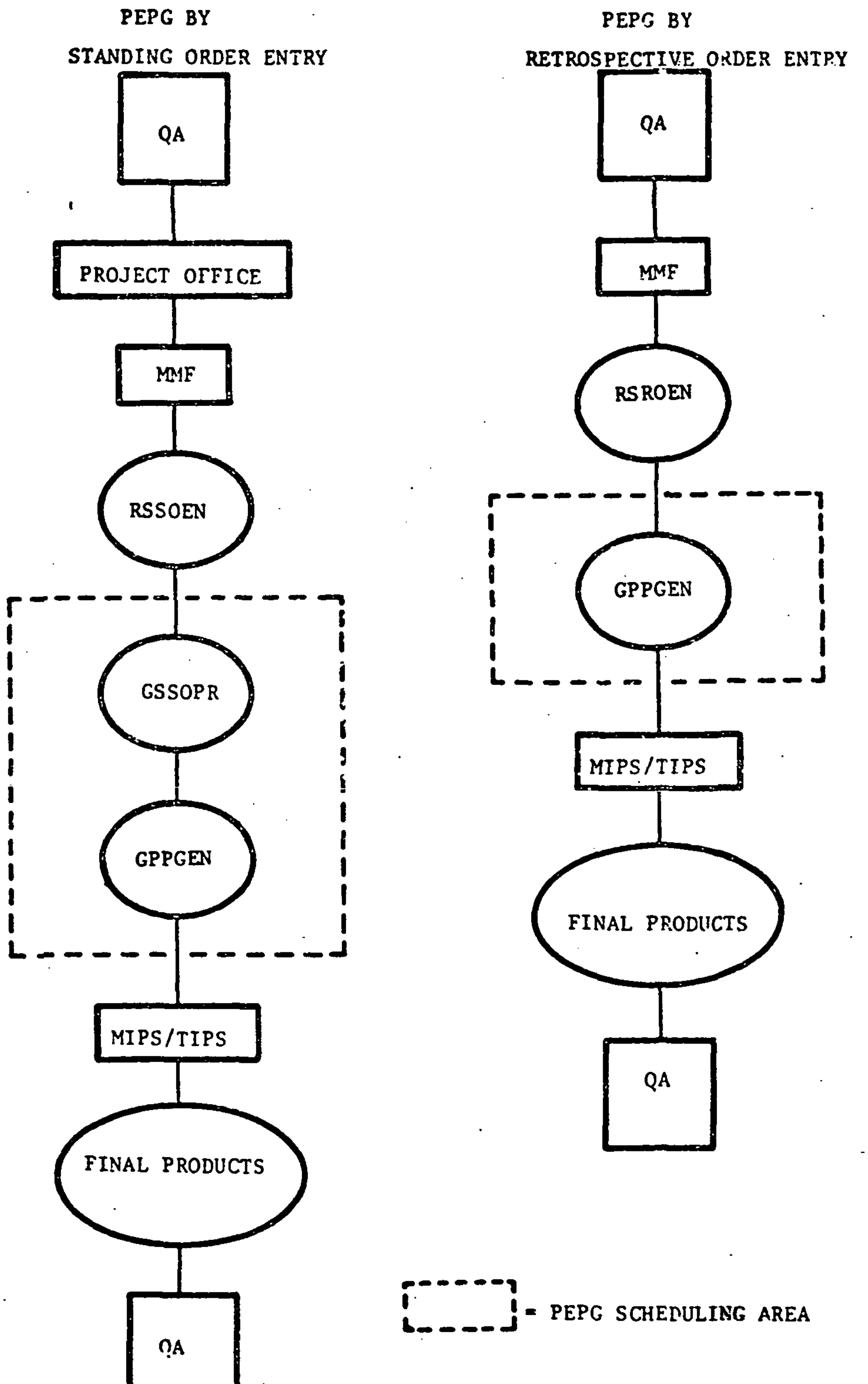

Figure 12-1. PEPG Paths

PEPG scheduling is performed to meet QA requirements. Estimated frequency is five times per day. Run time is estimated to be five minutes. PEPG scheduling has a medium priority. A four hour queue time is estimated for the PEPG process. The production control manager controls PEPG scheduling.

12.4 PROCESS OPERATIONS

12.4.1 STANDING ORDER PROCESSOR (GSSOPR)

12.4.1.1 Summary

The GSSOPR program scans all the product acquisition request records in the MMF data base to find those which have a status of "ready for standing order processing." These "ready for standing order processing" records are then searched for a path/row match with any existing user order requests. If an order request can be satisfied, then a product request is created and stored in the MMF data base under the status required by the product request (i.e., "ready for A to P processing," "ready for A-to-CCT-A processing," etc.) HDT-As which do not contain any product requirements are put under the status "ready for DRRTS."

GSSOPR can be run automatically as part of archive completion notification transaction, or it can be run in a manual mode allowing the operator to make a YES or NO decision about processing a particular HDT-A tape. After the completion of a GSSOPR run a processing summary log is produced detailing the

number of products scheduled, the total number not scheduled, and the processing activity of each HDT-A.

12.4.1.2 Input

GSSOPR requires the following data base files as inputs, regardless of the operational mode:

a. Archive/product

b. Production

c. Common parameter

d. User

e. Route.

Operator inputs are supplied only when GSSOPR is run in manual mode, and are in the form of responses to program prompts. The following details GSSOPR prompts and acceptable operator responses:

PROMPT	RESPONSE	EXPLANATION
DO YOU WISH TO CONTINUE WITH STANDING ORDER PROCESSING (Y/N)?	Y	CONTINUE WITH GSSOPR PROCESSING
	N	EXIT GSSOPR PROGRAM OPERATION
DO YOU WISH TO PROCESS THIS TAPE (Y/N)?	Y	PROCESS A-TAPE AND CREATE PRODUCT RECORDS
	N	DO NOT PROCESS A-TAPE OR CREATE PRODUCT RECORDS FROM THIS IMAGERY.

12.4.1.3 Output

GSSOPR updates or creates the following files:

a. MMF data base

b. Standing order request scratch file

c. Unfulfilled order scratch file

d. Unfulfilled order notification

e. Processing summary log.

Operator displays are generated only when GSSOPR is run in the manual mode. Table 12-1 lists operator displays and action required.

12.4.1.4 Operational Sequence

No action is necessary when GSSOPR is run automatically as part of the archive completion notifier transaction.

To run GSSOPR manually:

log in,

then key in either of the following statements:

@TAKE GSSOPR.CMD (for interactive processing)

@SUBMIT GSSOPR.CTL (for batch processing)

Output files and operator displays will then be generated.

12.4.1.5 Control Mechanism

The following types of messages can result from processing:

Fatal Errors

Preceded by "FATAL ERROR:", this error will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm

Table 12-1. Operator Me..age/Action Matrix

TEGORY	MESSAGE	DO NOT RE-RUN GSSOPR	DO NOT RE-RUN THAT HDT-A(MANUAL MODE)	PRINT GSSOPR.*	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	SEE ACCOMPANYING ERROR MESSAGE FOR ACTION
FATAL	FATAL ERROR: DBMS UNSUCCESSFUL ______ OPERATION	X					X		
	FATAL ERROR: _____ RECORD NOT FOUND	X	X				X		
	FATAL ERROR: DBMS, SEE SYSCOM ERROR STATUS	X					X		
	FATAL ERROR: UNABLE TO _____ FILE FOR _____	X		X				X	
	FATAL ERROR: UNABLE TO CARRY OUT _____ OPERATION	X		X				X	
	FATAL ERROR: ____________________	X		X				X	
ERROR	ERROR: INVALID RESPONSE. RESPONSE MUST BE Y OR N				X				
FORMATION	GSSOPR END OF PROCESSING					X			
	GSSOPR - ABNORMAL TERMINATION (IN TANDEM W/FATAL ERROR)								X
	DO YOU WISH TO PROCESS THIS TAPE (Y/N)?				X				
	THE TAPE ID IS: __________					X			
	RESPONSE HAS BEEN ACCEPTED					X			
	THERE WERE NO DAQ RECORDS THAT REQUIRED PROCESSING					X			
	DO YOU WISH TO CONTINUE WITH STANDING ORDER PROCESSING(Y/N).				X				

on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 12-1).

Error

This type of error message is preceded by "ERROR:", and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 12-1).

Informational

Messages of this type are preceded by the phrase "INFORMATION:", and describe general processing information such as file names, tape-IDs, and processing activities (see Table 12-1).

12.4.1.6 Program Scheduling

GSSOPR will be run on as required basis, normally in the automatic mode. Run time is negligible, nominally 2 minutes. Manual GSSOPR will be run at the direction of the production control manager.

12.4.2 GMS PRODUCTION CONTROL FINAL PRODUCT PROCESS REQUEST GENERATION (GPPGEN)

12.4.2.1 Summary

The GMS final product process request generation (GPPGEN) program searches the data base for final product requests, schedules them for processing, and creates process requests to be sent to MIPS/TIPS. It is activated automatically by the

HDT-P completion transaction or by operator action through the KCRT.

The first step of processing is to retrieve all product request records which have a status of "ready for HDT-A to CCT-A" (RCA), "ready for HDT-P or HDT-A to CCT-P" (RPP), "ready for HDT-P or HDT-A to LBR" (RPL). This information is used to build the product generation scratch file (PGNS).

The next processing step reads the PGNS file. In the automatic mode, each unique tape ID/final product combination is processed. In the manual mode the operator may accept/reject any combination for processing. For each tape accepted for processing, redundant requests are eliminated and repeated scenes with differing bands or quadrants are combined. The resolved, non-redundant scenes are written to the resolved PGNS file (RPGNS).

The RPGNS scene records are read and matched with those in the archive/product area in order to retrieve the band data. Each scene record has its status in the production area changed to "Scheduled for final product processing." Process request IDs and process request file names are computed for each unique tape ID/final product requested. Counts of the number of scenes per process request and the number of LBR images (if the final product is film) are accumulated. Header records for each process request are written along with the corresponding scene records to the process request scratch file (PPRs).

To facilitate MIPS/TIPS processing of the tapes, the final processing step sorts the PPRS file so that scenes within a process request are in order by IRIG start time. This sorted file is then split into separate Decnet process request files

(PPRs) and the file names are added to the "PGS to be sent" (PTB) data base directory. (The PPRS file is split at this point because it is a concatenation of all eventual process request files. There must be a separate process request file for each HDT/final product combination.) A summary listing is produced which lists each process request ID and file name, the archive/product ID, the number of scenes per process request, the number of LBR images (if any), operator actions (if manual mode), and if the HDT is currently located in the appropriate work station (MIPS/TIPS).

12.4.2.2 Input

GPPGEN requires the following data base files as inputs regardless of the operational mode:

a. Common parameter

b. Archive product

c. Production

d. Route.

Operator inputs are supplied only when GPPGEN is run in manual mode, and are in the form of responses to program prompts. The following table details GPPGEN prompts and acceptable responses:

PROMPT	RESP	EXPLANATION
DO YOU WISH TO CONTINUE PROCESSING (Y OR N)?	Y	Continue final product process request generation
	N	Halt final product process request generation

DO YOU WANT TO PROCESS THIS TAPE?	Y	Create a final product process request for the tape
	N	Do not create a final product process request for the tape.

12.4.2.3 Output

GPPGEN creates or updates the following files:

a. Archive product

b. Production

c. Directory

d. Common parameter

e. Processing Summary Log

f. User interaction log.

Included in the processing summary are:

a. Tape ID, number of scenes or process request

b. File name

c. Process request ID

d. Number of LBR scenes

e. Operator actions.

12.4.2.4 Operational Sequence

No action is necessary when GPPGEN is run automatically as part of the product completion transaction.

To run GPPGEN manually:

log in

then key in either of the following statements:

@TAKE GPPGEN.CMD (for interactive processing)

@SUBMIT GPPGEN.CTL (for batch processing)

Operator displays and output files will then be generated.

12.4.2.5 Control Mechanism

The following types of messages can result from processing.

Fatal Error - Preceded by "FATAL ERROR:", this error will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified the aborted processing by an audio alarm and an error message on the KCRT. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 12-2).

Error - This type of error message is preceded by "ERROR:", and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 12-2).

Informational - Messages of this type are preceded by the phrase "INFORMATION:", and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action.

Other - Operator prompts and general information (see Table 12-2).

Table 12-2. Operator Message/Action Matrix

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GORY	MESSAGE	DO NOT RERUN GPPGEN	TAKE GPPGENERR.CMD	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
L	FATAL ERROR: ______ FILE ERR IN ______	X	X			X	
	FATAL ERROR: UNABLE TO ______	X	X				X
	FATAL ERROR: THERE IS A GENERAL DBMS UTILIZATION PROBLEM	X	X				X
	FATAL ERROR: ______ MISSING FROM DATA BASE	X	X				X
	FATAL ERROR: PPD SENSOR TYPE ______ IS INCOMPATIBLE WITH BASE BASE TYPE	X	X				X
	FATAL ERROR: CURRENT FACILITY ____ SEND TO FACILITY SENSOR TYPE	X	X				X
	FATAL ERROR: ______	X	X			X	
R	ERROR: INVALID RESPONSE, RESPOND Y OR N			X			
	ERROR: ______					X	
ATION	INFORMATION: RESPONSE ACKNOWLEDGED. PROCESS REQUEST GENERATION NOT DONE				X		
	INFORMATION: RESPONSE ACKNOWLEDGED. PROCESS REQUEST GENERATION DONE				X		
	INFORMATION: HAVE ACCEPTED YOUR DECISION TO ______ ______				X		
	INFORMATION THERE WERE NO RECORDS READY FOR CCTA, CCTP AND FILM PRODUCTION				X		
	INFORMATION: OPERATOR ABORTED GPPGEN VIA CTRL-C				X		
	INFORMATION: THE ARCHIVE PRODUCT IS ______				X		
	INFORMATION: THE FINAL PRODUCT REQUESTED IS ______				X		
	INFORMATION: ______						
	DO YOU WISH TO CONTINUE GPPGEN PROCESSING (Y/N)?			X			

Table 12-2. (Continued)

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ORY	MESSAGE	DO NOT RERUN GPPGEN	TAKE GPPGENERR.CMD	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINIS-TRATOR
	DO YOU WISH TO OVERRIDE THIS CONDITION AND PROCESS RECORD (Y/N)?			X			
	GPPGEN - END OF PROCESSING				X		

12.4.2.6 Program Scheduling

GPPGEN will be run on an as required basis, normally in the automatic mode. Run time is estimated to be 3 to 5 minutes. Manual GPPGEN will be run at the direction of the production control manager.

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Standing Order Information

Standing orders may be entered via a CRT using the approved form (reference figure 2 for a preliminary version). This information may also be entered via a standing order tape (reference Appendix A). Modifications to a standing order in the data base will be accomplished by deleting the order and reentering it with the new information. This will require that all information for the modified order be submitted on the approved standing order form. Deletion of an order can also be accomplished interactively only using the order id.

A standing order is a request by a user for image products and/or acquisitions of geographical areas within a specified time span. These acquisitions or products share a common set of order criteria such as sensor, cloud cover, etc. Note that the generation of an HDT-A tape is the automatic result of a request for image acquisition by a domestic user. Consequently, HDT-A tapes may not be requested by a standing order for user products.

Standing order information consists of the following:

User ID	-	A six character alphanumeric identifier which uniquely identifies the user who placed the order. This ID provides a link to such user information as the address of the user.
User Type	-	A flag identifying the user as either forei n or domestic.
Mission	-	The number of the Landsat satellite to be used to provide imagery. Note that a 'Ø' indicates "no preference".
Sensor	-	A flag indicating the sensor to be used.
Minimum sun angle	-	The minimum sun angle at which the picture is to be taken.
Receiving Station	-	A four character code identifying the ground station at which the video is to be received.
Date Span	-	The begin and end dates for the time period for which this standing order is to remain active.
Gain (For MSS only)	-	The desired gain setting for the MMS sensor.
Mode (For MSS only)	-	The desired mode setting for the MMS sensor.

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Block or Segments	-	The path/row descriptors for the geographical area. Geographical areas are described as either blocks or segments. A segment consist of multiple contiguous rows along a path and is identified using a path, a start row and an end row. A block consists of a convex polygon of area and is identified using the end points of the diagonal as western-most path and row, and eastern-most path and row.

The following additional information applies to standing orders for acquistion:

Acquisition Priority	-	The relative priority of this acquistion order.
Number of Acquisition Hits	-	The maximum number of times that the requeste scene is to be acquired within the specified time span. Special notation will exist to indicate "everytime".
Maximum Cloud Cover	-	The maximum predicted cloud cover at which this acquisition is to be attempted.

The following additional information applies to standing orders for products:

Product Priority	-	The relative priority of this product order.
Number Product Hits Desired	-	The maximum number of times that the requeste products are to be generated within the specified time span. Special notation will exist to indicate "everytime".
Maximum Cloud Cover	-	The maximum assessed cloud cover for which this product is to be generated.
Product Code	-	A code which identifies product type, map projection and resampling algorithm, (reference PIR U-1T23-LSD-DMS-GEN-008).
Number Product Copies Desired	-	The number of copies to be made of each product generated.
Quadrants (for TM CCT Product Only)	-	A code which identifies which quadrants are desired on TM CCT products.

Enclosure 12-1. (Cont'd)

Acceptable Quality	-	The lowest quality which will be accepted for products.

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STANDING ORDER REQUEST

USER ID:_ _ _ _ _ _

USER TYPE:_

MISSION:_

MINIMUM SUN ANGLE: _ _

SENSOR:_

RECEIVING STATION :_ _ _ _

DATE SPAN (YYDDD):

FOR MSS - GAIN:_

START:_ _ _ _ _ STOP:_ _ _ _ _

MODE:_

FOR ACQUISITION

PRIORITY:_ _

NUMBER HITS DESIRE:_ _

MAXIMUM PREDICTED CLOUD COVER:_ _

FOR PRODUCT

PRIORITY:_

NUMBER HITS DESIRE:_ _

MAXIMUM ASSESSED CLOUD COVER:_ _

PRODUCT CODE:_ _ _ _

NUMBER COPIES DESIRE:_ _

ACCETABLE QUALITY:_ _

QUADRANTS (FOR TM CCT PRODUCTS):_

AREA DEFINED AS BLOCK OR SEGMENT:_

AREAS

BLOCK (RECTANGLE) - GIVE THE END POINTS OF THE DIAGONAL

PATH_ _ _ ROW_ _ _ PATH_ _ _ ROW_ _ _

SEGMENTS:

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

PATH_ _ _ ROW_ _ _ TO ROW_ _ _

FIGURE 2

Retrospective Order Information

A retrospective order is a request for products from available imagery. Retrospective orders will be entered into the system via CRT using the approved form (reference figure 3 for a preliminary version).

Retrospective order information consists of the following:

User ID	-	A six character alphanumeric identifier which uniquely identifies the user requesting the product. The information for the user must have been previously entered into the data base.
Priority	-	The relative priority of this retrospective order.
Product Code	-	The code identifying what type of product is to be generated. (reference PIR U-1T23-LSD-DMS-GEN-008).
Copies	-	The number of copies of each product to be generated.
NASA Scene ID	-	The identifier of the scene for which the product is to be generated. The format of this ID is SDDDDHHMMT where: S = Satellite number DDDD = days since launch HHMMT = time of day in tens of seconds
Sensor	-	Sensor used to take the desired scene.
Path	-	Path associated with desired scene.
Row	-	Row associated with desired scene.
Quadrants (for TM CCT products only)	-	Quadrants of the scene for which products are to be generated.

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PETROSPECTIVE ORDER REQUEST

User ID: _ _ _ _ _ _

PRIORITY: _

PRODUCT: - - - -   COPIES: _ _

FOR EACH SCENE:

NASA SCENE ID	SENSOR	PATH	ROW	QUADRANTS
- - - - - - - - - -	-	- - -	- - -	- - - -
- - - - - - - - - -	-	- - -	- - -	- - - -
- - - - - - - - - -	-	- - -	- - -	- - - -
- - - - - - - - - -	-	- - -	- - -	- - - -
- - - - - - - - - -	-	- - -	- - -	- - - -

Figure 3

LEGEND

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DESCRIPTION

HDT-AM	=	MSS Partially Processed High Density Tape
HDT-AT	=	TM Partially Processed High Density Tape
HDT-PT	=	TM Fully Processed High Density Tape
F241-AM	=	MSS Partially Processed 241 mm LBR Film
F241-PM	=	MSS Fully Processed 241 mm LBR Film
F241-AT	=	TM Partially Processed 241 mm LBR Film
F241-PT	=	TM Fully Processed 241 mm LBR Film
CCT-AM	=	MSS Partially Processed Computer Compatible Tape
CCT-PM	=	MSS Fully Processed Computer Compatible Tape
CCT-AT	=	TM Partially Processed Computer Compatible Tape
CCT-PT	=	TM Fully Processed Computer Compatible Tape
BSQ	=	Band Sequential
BIL	=	Band Interleaved by Line

MAP PROJECTION/RESAMPLING TYPE

SOM	=	Space Oblique Mercator
UTM-PS	=	Universal Transverse Mercator or Polar Stereographic
CC	=	Cubic Convolution
NN	=	Nearest Neighbor

OTHER ATTRIBUTES

POS	=	Positive LBR Image Format (positive prints)
NEG	=	Negative LBR Image Format (negative prints)
TRUE	=	True LBR Image Sense
REV	=	Reverse LBR Image Format
LIN	=	Linear LBR Transfer Function Type
LOG	=	Log LBR Transfer Function Type
6250	=	6250 Bit Per Inch CCT Recording Density
1600	=	1600 Bit Per Inch CCT Recording Density
FULL SCENE	=	Full Scene Image CCT Format
QUADRANT	=	Quadrant Image CCT Format (TM only)

USE

DIS	=	Distribution external to Ground Segment
INT	=	Distribution internal to Ground Segment only
ARCH	=	Archival Medium
RES	=	Not currently a Ground Segment product; this product code reserved for possible future use.

MSS PRODUCT CODES

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PRODUCT CODE	DESCRIPTION (INTERLEAVING FORMAT)	MAP PROJECTION/ RESAMPLING TYPE	USE	OTHER ATTRIBUTES
1000	HDT-AM(BSQ)	-	DIS,ARCH	
3211	F241-PM(BSQ)	SOM/CC	INT	POS,TRUE,LIN
3212	F241-AM(BSQ)	-	INT	"
3216	F241-PM(BSQ)	SOM/CC	INT	POS,TRUE,LOG
3217	F241-AM(BSQ)	-	INT	"
3221	F241-PM(BSQ)	SOM/CC	INT	POS,REV,LIN
3222	F241-AM(BSQ)	-	INT	"
3226	F241-PM(BSQ)	SOM/CC	INT	POS,REV,LOG
3227	F241-AM(BSQ)	-	INT	"
3231	F241-PM(BSQ)	SOM/CC	INT	NEG,TRUE,LIN
3232	F241-AM(BSQ)	-	INT	"
3236	F241-PM(BSQ)	SOM/CC	INT	NEG,TRUE,LOG
3237	F241-AM(BSQ)	-	INT	"
3241	F241-PM(BSQ)	SOM/CC	INT	NEG,REV,LIN
3242	F241-AM(BSQ)	-	INT	"
3246	F241-PM(BSQ)	SOM/CC	INT	NEG,REV,LOG
3247	F241-AM(BSQ)	-	INT	"
3311	F241-PM(BSQ)	SOM/NN	INT	POS,TRUE,LIN
3316	F241-PM(BSQ)	SOM/NN	INT	POS,TRUE,LOG
3321	F241-PM(BSQ)	SOM/NN	INT	POS,REV,LIN
3326	F241-PM(BSQ)	SOM/NN	INT	POS,REV,LOG
3331	F241-PM(BSQ)	SOM/NN	INT	NEG,TRUE,LIN
3336	F241-PM(BSQ)	SOM/NN	INT	NEG,TRUE,LOG
3341	F241-PM(BSQ)	SOM/NN	INT	NEG,REV,LIN
3346	F241-PM(BSQ)	SOM/NN	INT	NEG,REV,LOG
3411	F241-PM(BSQ)	UTM-PS/CC	INT	POS,TRUE,LIN
3416	F241-PM(BSQ)	UTM-PS/CC	INT	POS,TRUE,LOG
3421	F241-PM(BSQ)	UTM-PS/CC	INT	POS,REV,LIN
3426	F241-PM(BSQ)	UTM-PS/CC	INT	POS,REV,LOG
3431	F241-PM(BSQ)	UTM-PS/CC	INT	NEG,TRUE,LIN
3436	F241-PM(BSQ)	UTM-PS/CC	INT	NEG.TRUE,LOG
3441	F241-PM(BSQ)	UTM-PS/CC	INT	NEG,REV,LIN
3446	F241-PM(BSQ)	UTM-PS/CC	INT	NEG,REV,LOG
3511	F241-PM(BSQ)	UTM-PS/NN	INT	POS,TRUE,LIN
3516	F241-PM(BSQ)	UTM-PS/NN	INT	POS,TRUE,LOG
3521	F241-PM(BSQ)	UTM-PS/NN	INT	POS,REV,LIN
3526	F241-PM(BSQ)	UTM-PS/NN	INT	POS,REV,LOG
3531	F241-PM(BSQ)	UTM-PS/NN	INT	NEG,TRUE,LIN
3536	F241-PM(BSQ)	UTM-PS/NN	INT	NEG,TRUE,LOG
3541	F241-PM(BSQ)	UTM-PS/NN	INT	NEG,REV,LIN
3546	F241-PM(BSQ)	UTM-PS/NN	INT	NEG,REV,LOG

Enclosure 12-2. (Cont'd)

MSS PRODUCT CODES (cont'd.)

PRODUCT CODE	DESCRIPTION (INTERLEAVING FORMAT)	MAP PROJECTION/ RESAMPLING TYPE	USE	OTHER ATTRIBUTES
5226	CCT-PM(BSQ)	SOM/CC	RES	1600,QUADRANT
5321	CCT-PM(BSQ)	SOM/NN	INT	1600,FULL SCENE
5421	CCT-PM(BSQ)	UTM-PS/CC	INT	1600,FULL SCENE
5521	CCT-PM(BSQ)	UTM-PS/NN	INT	1600,FULL SCENE

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TM PRODUCT CODES

PRODUCT CODE	DESCRIPTION (INTERLEAVING FORMAT)	MAP PROJECTION/ RESAMPLING TYPE	USE	OTHER ATTRIBUTES
1100	HDT-AT(BIL)	--	ARCH	
1200	HDT-PT(BSQ)	SOM/CC	INT	
1300	HDT-PT(BSQ)	SOM/NN	INT	
1400	HDT-PT(BSQ)	UTM-PS/CC	INT	
1500	HDT-PT(BSQ)	UTM-PS/NN	INT	
3210	F241-PT(BSQ)	SOM/CC	DIS	POS,TRUE,LIN
3215	F241-PT(BSQ)	SOM/CC	RES	POS,TRUE,LOG
3220	F241-PT(BSQ)	SOM/CC	RES	POS,REV,LIN
3225	F241-PT(BSQ)	SOM/CC	RES	POS,REV,LOG
3230	F241-PT(BSQ)	SOM/CC	RES	NEG,TRUE,LIN
3235	F241-PT9BSQ)	SOM/CC	RES	NEG,TRUE,LOG
3240	F241-PT(BSQ)	SOM/CC	RES	NEG,REV,LIN
3245	F241-PT(BSQ)	SOM/CC	RES	NEG,REV,LOG
3310	F241-PT(BSQ)	SOM/NN	DIS	POS,TRUE,LIN
3315	F241-PT(BSQ)	SOM/NN	RES	POS,TRUE,LOG
3320	F241-PT(BSQ)	SOM/NN	RES	POS,REV,LIN
3325	F241-PT(BSQ)	SOM/NN	RES	POS,REV,LOG
3330	F241-PT(BSQ)	SOM/NN	RES	NEG,TRUE,LIN
3335	F241-PT(BSQ)	SOM/NN	RES	NEG,TRUE,LOG
3340	F241-PT(BSQ)	SOM/NN	RES	NEG,REV,LIN
3345	F241-PT(BSQ)	SOM/NN	RES	NEG,REV,LOG
3410	F241-PT(BSQ)	UTM-PS/CC	DIS	POS,TRUE,LI
3415	F241-PT(BSQ)	UTM-PS/CC	RES	POS,TRUE,LO
3420	F241-PT(BSQ)	UTM-PS/CC	RES	POS,REV,LIN
3425	F241-PT(BSQ)	UTM-PS/CC	RES	POS,REV,LOG
3430	F241-PT(BSQ)	UTM-PS/CC	RES	NEG,LIN,LIN
3435	F241-PT(BSQ)	UTM-PS/CC	RES	NEG,LIN,LOG
3440	F241-PT(BSQ)	UTM-PS/CC	RES	NEG,REV,LIN
3445	F241-PT(BSQ)	UTM-PS/CC	RES	NEG,REV,LOG
3510	F241-PT(BSQ)	UTM-PS/NN	DIS	POS,TRUE,LI
3515	F241-PT(BSQ)	UTM-PS/NN	RES	POS,TRUE,LO
3520	F241-PT(BSQ)	UTM-PS/NN	RES	POS,REV,LIN
3525	F241-PT(BSQ)	UTM-PS/NN	RES	POS,REV,LOG
3530	F241-PT(BSQ)	UTM-PS/NN	RES	NEG,TRUE,LI
3535	F241-PT(BSQ)	UTM-PS/NN	RES	NEG,TRUE,LO
3540	F241-PT(BSQ)	UTM-PS/NN	RES	NEG,REV,LIN
3545	F241-PT(BSQ)	UTM-PS/NN	RES	NEG,REV,LOG

Enclosure 12-2. (Cont'd)

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TM PRODUCT CODES (cont'd)

PRODUCT CODE	DESCRIPTION (INTERLEAVING FORMAT)	MAP PROJECTION/ RESAMPLING TYPE	USE	OTHER ATTRIBUTES
3610	F241-AT(BIL)	-	INT	POS,TRUE,LIN
3615	F241-AT(BIL)	-	RES	POS,TRUE,LOG
3620	F241-AT(BIL)	-	RES	POS,REV,LIN
3625	F241-AT(BIL)	-	RES	POS,REV,LOG
3630	F241-AT(BIL)	-	RES	NEG,TRUE,LIN
3635	F241-AT(BIL)	-	RES	NEG,TRUE,LOG
3640	F241-AT(BIL)	-	RES	NEG,REV,LIN
3645	F241-AT(BIL)	-	RES	NEG,REV,LOG
3710	F241-AT(BSQ)	-	RES	POS,TRUE,LIN
3715	F241-AT(BSQ)	-	RES	POS,TRUE,LOG
3720	F241-AT(BSQ)	-	RES	POS,REV,LIN
3725	F241-AT(BSQ)	-	RES	POS,REV,LOG
3730	F241-AT(BSQ)	-	RES	NEG,TRUE,LIN
3735	F241-AT(BSQ)	-	RES	NEG,TRUE,LOG
3740	F241-AT(BSQ)	-	RES	NEG,REV,LIN
3745	F241-AT(BSQ)	-	RES	NEG,REV,LOG
5110	CCT-AT(BSQ)	-	RES	6250,FULL SCENE
5115	CCT-AT(BSQ)	-	DIS	6250,QUADRANT
5120	CCT-AT(BSQ)	-	RES	1600,FULL SCENE
5125	CCT-AT(BSQ)	-	DIS	1600,QUADRANT
5130	CCT-AT(BIL)	-	RES	6250,FULL SCENE
5135	CCT-AT(BIL)	-	DIS	6250,QUADRANT
5140	CCT-AT(BIL)	-	RES	1600,FULL SCENE
5145	CCT-AT(BIL)	-	DIS	1600,QUADRANT
5210	CCT-PT(BSQ)	SOM/CC	RES	6250,FULL SCENE
5215	CCT-PT(BSQ)	SOM/CC	DIS	6250,QUADRANT
5220	CCT-PT(BSQ)	SOM/CC	RES	1600,FULL SCENE
5225	CCT-PT(BSQ)	SOM/CC	DIS	1600,QUADRANT
5230	CCT-PT(BIL)	SOM/CC	RES	6250,FULL SCENE
5235	CCT-PT(BIL)	SOM/CC	DIS	6250,QUADRANT
5240	CCT-PT(BIL)	SOM/CC	RES	1600,FULL SCENE
5245	CCT-PT(BIL)	SOM/CC	DIS	1600,QUADRANT

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TM PRODUCT CODES (cont'd)

PRODUCT CODE	DESCRIPTION (INTERLEAVING FORMAT)	MAP PROJECTION/ RESAMPLING TYPE	USE	OTHER ATTRIBUTES
5310	CCT-PT(BSQ)	SOM/NN	RES	6250,FULL SCEN
5315	CCT-PT(BSQ)	SOM/NN	DIS	6250,QUADRANT
5320	CCT-PT(BSQ)	SOM/NN	RES	1600,FULL SCEN
5325	CCT-PT(BSQ)	SOM/NN	DIS	1600,QUADRANT
5330	CCT-PT(BIL)	SOM/NN	RES	6250,FULL SCEN
5335	CCT-PT(BIL)	SOM/NN	DIS	6250,QUADRANT
5340	CCT-PT(BIL)	SOM/NN	RES	1600,FULL SCEN
5345	CCT-PT(BIL)	SOM/NN	DIS	1600,QUADRANT
5410	CCT-PT(BSQ)	UTM-PS/CC	RES	6250,FULL SCEN
5415	CCT-PT(BSQ)	UTM-PS/CC	DIS	6250,QUADRANT
5420	CCT-PT(BSQ)	UTM-PS/CC	RES	1600,FULL SCEN
5425	CCT-PT(BSQ)	UTM-PS/CC	DIS	1600,QUADRANT
5430	CCT-PT(BIL)	UTM-PS/CC	RES	6250,FULL SCEN
5435	CCT-PT(BIL)	UTM-PS/CC	DIS	6250,QUADRANT
5440	CCT-PT(BIL)	UTM-PS/CC	RES	1600,FULL SCEN
5445	CCT-PT(BIL)	UTM-PS/CC	DIS	1600,QUADRANT
5510	CCT-PT(BSQ)	UTM-PS/NN	RES	6250,FULL SCEN
5515	CCT-PT(BSQ)	UTM-PS/NN	DIS	6250,QUADRANT
5520	CCT-PT(BSQ)	UTM-PS/NN	RES	1600,FULL SCEN
5525	CCT-PT(BSQ)	UTM-PS/NN	DIS	1600,QUADRANT
5530	CCT-PT(BIL)	UTM-PS/NN	RES	6250,FULL SCEN
5535	CCT-PT(BIL)	UTM-PS/NN	DIS	6250,QUADRANT
5540	CCT-PT(BIL)	UTM-PS/NN	RES	1600,FULL SCEN
5545	CCT-PT(BIL)	UTM-PS/NN	DIS	1600,QUADRANT

Enclosure 12-2. (Cont'd)

SECTION 13

PERFORMANCE EVALUATION PRODUCT GENERATION (PEPG)

13.1 ENVIRONMENT/RESOURCES

The PEPG activities are performed in the Multispectral Scanner Image Processing System (MIPS) area located in the computer room, first floor, Building 28, Goddard Space Flight Center.

13.1.1 HARDWARE REQUIREMENTS

Three parallel strings of equipment (Figure 13-1) are available. One string of equipment will support PEPG. All elements of that equipment are involved for complete PEPG support.

13.1.2 SOFTWARE REQUIREMENTS

The PEPG process consists of the following subprocesses:

a. Monitor

b. Test pattern generation

c. MSS product generation

d. Comtal scene display

e. Ingest

f. Geometric corrections

g. Dumps and reports generation.

13.2 OVERVIEW/BACKGROUND

13.2.1 PRECEDING ACTIVITIES

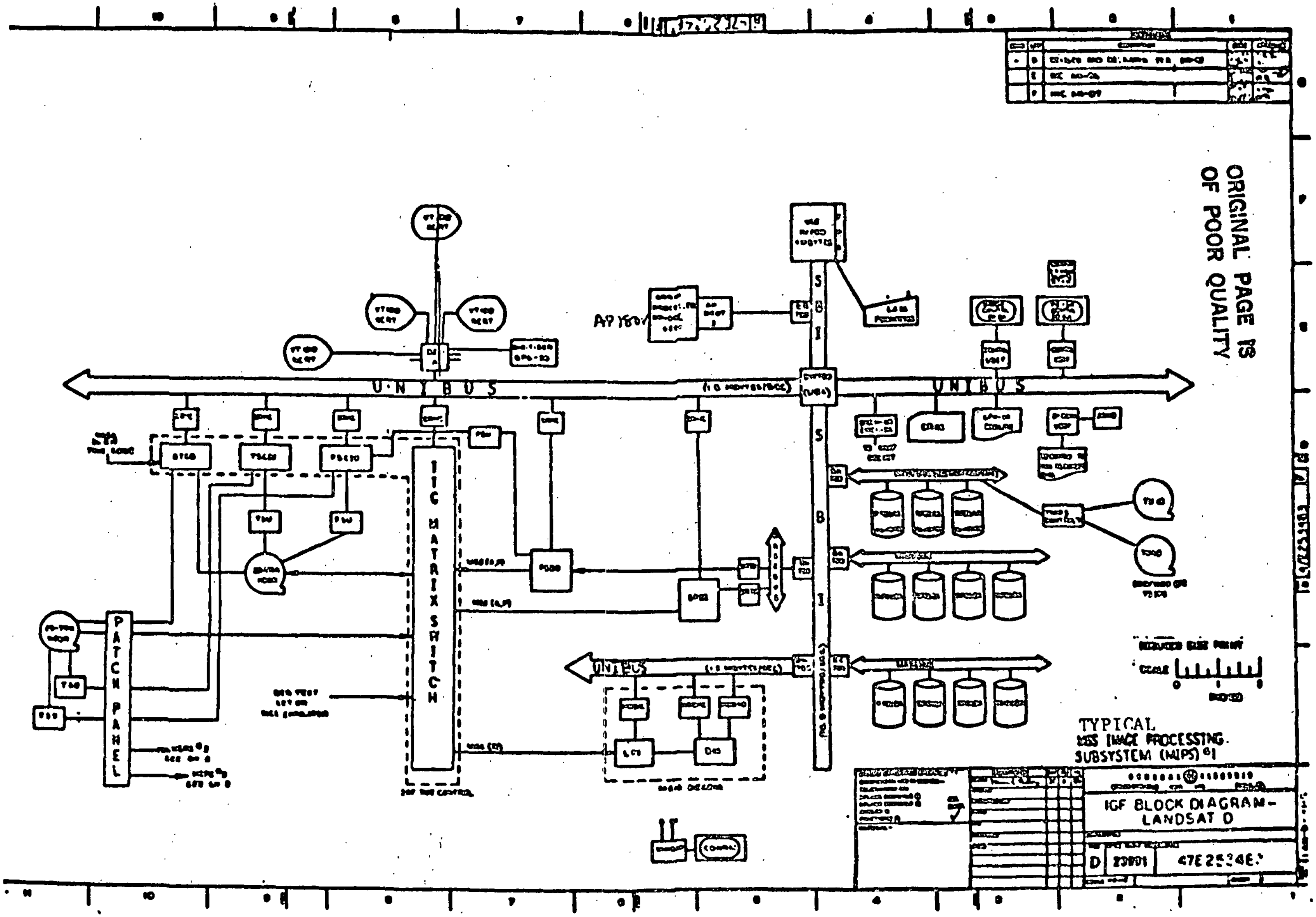

Figure 13-1. MIPS-1 ırdware Diagram

The Landsat-D spacecraft gathers image data which is transmitted to a ground station. The data is further transmitted to the Data Receive Record and Transmit System (DRRTS) which is located in the same computer room as MIPS. The data is recorded on a high density digital recorder (HDDR) and the tape is labeled high density tape raw data from MSS (HDT-RM). From the HDT-RM, MIPS generates a radiometrically corrected high density tape that is labeled HDT-AM. The HDTs are stored in the Temporary Archive Storage (TAS) to be withdrawn as needed for processing.

The Mission Management Facility -- Multispectral Scanner (MMF-M) coordinates all activities, both internal and external to the Landsat-D Ground System (GS). Whenever a requirement to process any or all of PEPG arises, process requests (PR) are sent to the MIPS-PEPG personnel for performance.

MIPS personnel coordinate the assignment of hardware, software, PRs, CCTs, and HDT-AMs. Each PR is subdivided into as many work orders (WO) as necessary to facilitate the selection of proper packages of work as defined in the subprocess instructions. For PEPG, a PR normally consists of only one WO.

13.2.2 SUCCEEDING ACTIVITIES

After PEPG processing has been completed according to the work order instructions, results are available in the form of CCTs, dumps, reports, MSS products, and disk files as appropriate. These data are distributed, according to the WO, to assigned analysis personnel.

13.2.3 SCOPE OF PEPG

PEPG provides a means to investigate hardware and software performance relating to the MIPS operations. Except for dumps and/or displays of raw data, it is designed to permit analysts to see cause and effect of process results as image elements progress through the system.

13.3 FUNCTIONAL DESCRIPTION

The PEPG consists of the functions to generate products and to evaluate selected MSS products and the performance of the processes involved in generating them.

Interface relationships of PEPG to other activities are shown in Figure 13-2, and control and communications flow are shown in Figure 13-3.

13.3.1 INPUTS

PEPG is capable of ingesting the inputs shown below:

SOURCE	DESCRIPTION OF INPUTS
Operator Terminal	Operator Inputs
Tape Storage	HDT-AM (BSQ)
Tape Storage	CCT-AM (1600 bpi, BSQ)
Tape Storage	CCT-PM (1600 bpi, BSQ)
MMF	Process Request
MMF	Long-Term Parameter File
MMF	Short-Term Parameter File
MIPS	Operational Parameter File
DRRTS	Tape and Film Labels
Photo Lab	LBR Calibration Data

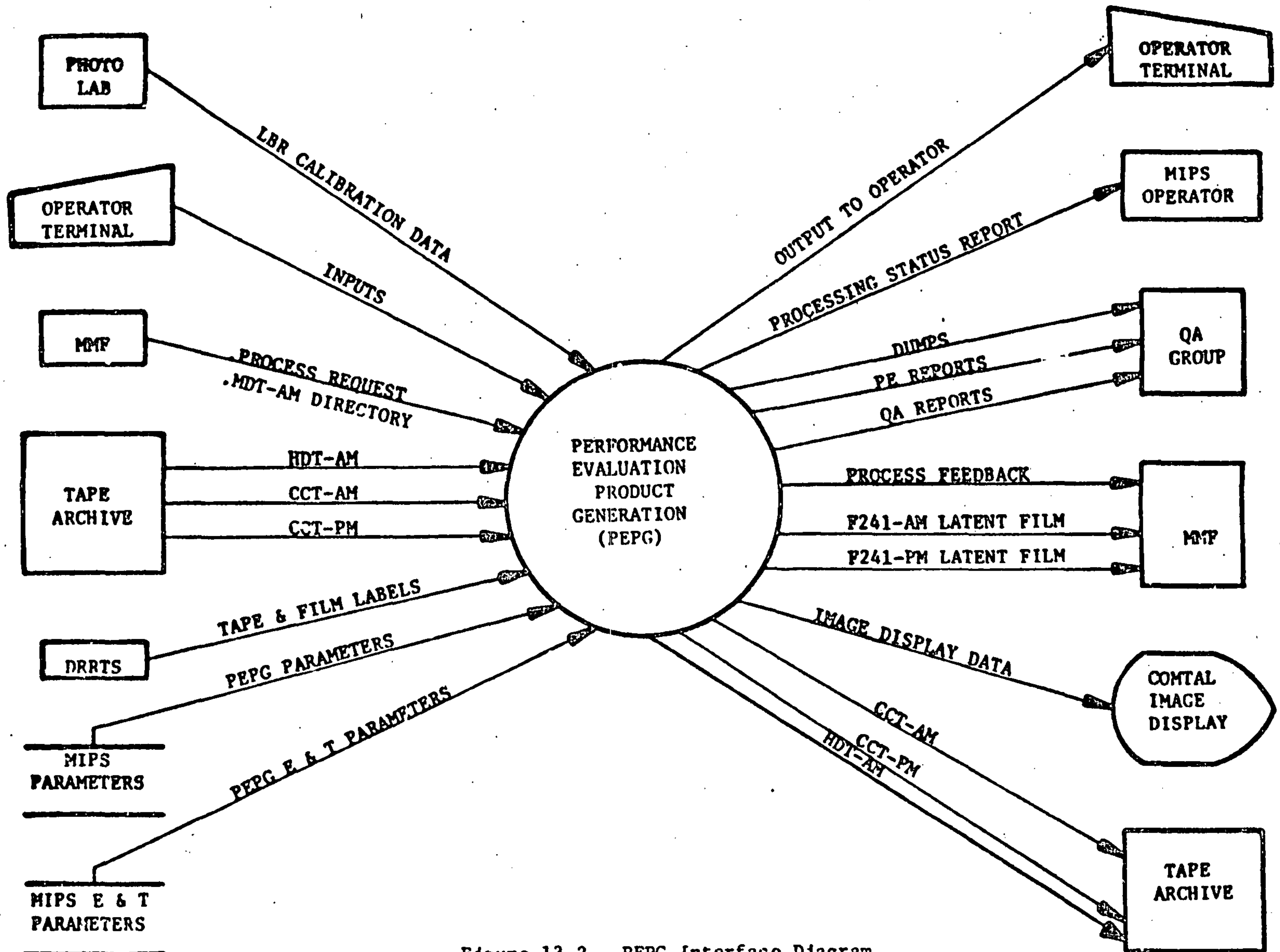

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Figure 12-2. PEPG Interface Diagram

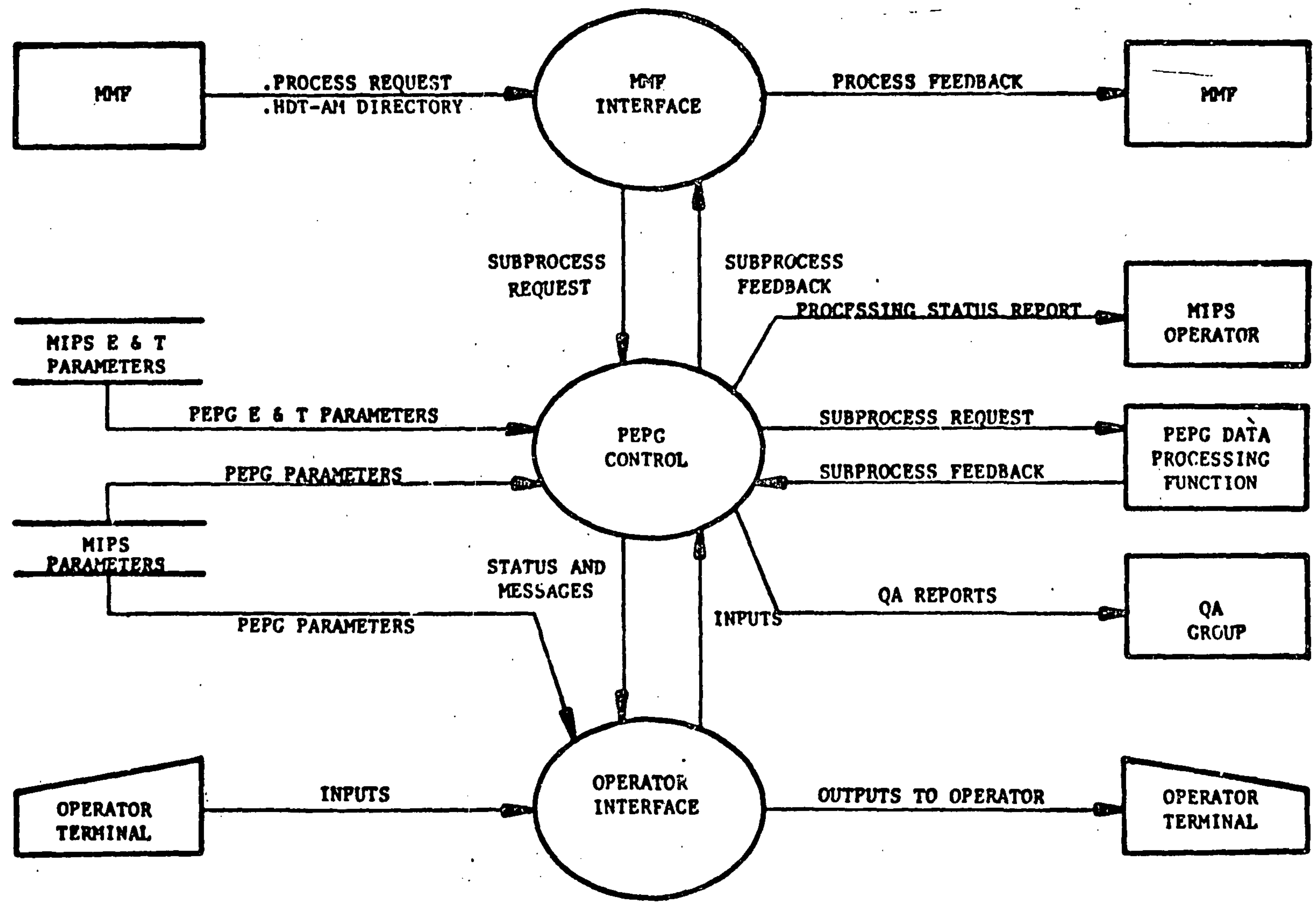

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Figure 13-3. PEPG Control and Communication

C-7

13.3.2 OUTPUTS

After the PEPG subprocesses have acted on the input data, outputs are available as shown below:

SOURCE	DESCRIPTION OF INPUTS
Operator Terminal	Outputs to Operator
Tape Storage	CCT-AM (1600 bpi, BSQ)
Tape Storage	CCT-PM (1600 bpi, BSQ)
MMF	Process Feedback
MMF	F241-AM Latent Film
MMF	F241-PM Latent Film
QA Group	Dumps
QA Group	PE Reports
Comtal	Image Display Data
QA Group	QA Reports
MIPS Operator	Processing Status Reports

13.3.3 HARDWARE/SOFTWARE SUMMARY

<u>Hardware</u>

The MIPS hardware consists of three independent strings of equipment. Except for card reader, x-y digitizer and one VT100 keyboard display, the strings are identical. Table 13-1 gives model no., vendor and a brief description of the MIPS hardware.

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Table 13-1. MIPSI Hardware List (Sheet 1 of 3)

ITEM	DESCRIPTION	VENDOR	MODEL
1	SINGLE PORT DISKS (11)	DEC	RP06AA
2	VAX11/780	DEC	VAX11/780
3	SPDI/PSDO CABINET	GE LANHAM	N.A.
4	TAPE UNIT (2)	DEC	TU45
5	DEC WRITER - HARD COPY TERMINAL	DEC	LA36-CE
6	LINE PRINTER	DEC	LP11-VA
7	COMTAL IMAGE PROCESSORS (2)	COMTAL	30-SA
8	VIDEO TERMINAL KCRT (4)	DEC	VT100-AA
9	DIGITAL IMAGE RECORDER 70 MM	DICOMED	D46
10	ZOOM TRANSFER SCOPE	BAUSCH & LOMB	ZT4H
11	DIGITIZER	SCIEN. ASSOC. CORP.	GPG-30
12	28-TRK HDDR	MARTIN	2879L
13	CARD READER	DEC	CR11-A
14	H9602-DF EXPANSION CABINET	DEC	H9602-DF
15	H9602-HA EXPANSION CABINET	DEC	H9602-HA
16	TAPE STORAGE RACKS	ACME VISIBLE	CUSTOM
17	ARRAY PROCESSOR	FPS	AP180V
18	MOVING W DISP.	MDA	N/A
19	MIPS PATCH P.	GE-L	N/A
20	MIPS HDDR INTERCONN	GE-L	N/A

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Table 13-1. MIPSI Hardware List (Sheet 2 of 3)

ITEM	DESCRIPTION	VENDOR	MODEL
21	DECNET LINK	DEC	DMC11-DA
22	DECNET LINK	DEC	DMC11-AB
23	SERIAL LINE MULTIPLEXER	DEC	DZ11-A
24	UNIBUS GENERAL PURPOSE INTERFACE	DEC	DR11-C
25	MASSBUS GENERAL PURPOSE INTERFACE	DEC	DR70
26	GENERAL PURPOSE LMA INTERFACE	DEC	DR11-B
27	MASSBUS ADAPTOR	DEC	RH780
28	UNIBUS ADAPTOR	DEC	DW780-AA
29	RACK-MOUNTABLE EXTENSION MOUNTING BOX 5 SYSTEM UNIT	DEC	BA11-KE
30	EXPANSION BACKPLANE MOUNTING UNITS, HEX 2 QUAD	DEC	DD11-DK
31	256 KB MEMORY WITHOUT CONTROLLER	DEC	MS780-DA
32	256 KBYTE MEMORY WITH CONTROLLER	DEC	MS780-CA
33	1 MBYTE MEMORY (3)	DEC	MS780-DC
34	500 KBYTE MEMORY	DEC	MS780-DB
35	FLOATING POINT ACCELERATOR (FPA)	DEC	FP780-AA
36	DEC INTERFACE	DEC	DR780
37	SYNCHRONIZED TIME CODE GENERATOR (STCG)	DATUM	9100-921
38	FREQUENCY SYNTHESIZER COMPUTER INTERFACE UNIT (FSCIU)	DATUM	9800-530

Table 13-1. MIPSI Hardware List (Sheet 3 of 3)

ITEM	DESCRIPTION	VENDOR	MODEL
39	FREQUENCY SYNTHESIZER UNIT (FSU)	PRD HARRIS	N/A
40	TAPE SEARCH UNIT (TSU)	DATUM	9241-241
41	TIMING SUBSYSTEM COMPUTER INTERFACE UNIT (TSCIU)	DATUM	9800-626
42	TIME CODE TRANSLATOR (TCT)	DATUM	9210-646
43	COMTAL BLACK & WHITE (2) MONITOR	COMTAL	BRBT-17
44	UNIBUS INTERFACE	MDA	MDB-11C
45	UNIBUS INTERFACE	MDA	MDB-11B
46	LANDSAT FORMAT SYNC BUFFER MEMORY	MDA	N/A
47	COMTAL UNIBUS INTERFACE (2)	COMTAL	N/A
48	IGF TAPE CONTROL (ITC) MATRIX SWITCH	GE LANHAM	N/A
49	4 BIT RAM IMAGE MEMORY (2)	COMTAL	MI-82-2-1
50	2 BIT GRAPHIC MEMORY (2)	COMTAL	MI-82-2-3
51	PROGRAMMABLE TRACKBALL (2)	COMTAL	N/A
52	DATA DESK (2)	COMTAL	N/A

Software

PEPG software consists of a PEPG package and seven computer program subprocesses. They are:

a. PEPG monitor process
b. Test pattern generation subprocess
c. MSS product generation subprocess
d. Comtal display subprocess
e. Ingest subprocess
f. Geometric corrections subprocess
g. Dumps and reports generation subprocess
h. Film mount subprocess
i. Interactive dump subprocess.

13.4 PROCESS OPERATIONS

The PEPG process is supported by a number of subprocesses and routines, as listed in this section. Specification relationships are shown in Figure 13-4.

13.4.1 PEPG MONITOR PROCESS (PEPGMON)

The PEPG software employs independently executing subprocesses to accomplish its requirements. PEPGMON is the process which oversees and controls the execution of the remainder of the subprocesses. This process exists above all others in the hierarchy of PEPG processes. The communication mechanism utilized to control the PEPG processes is the VAX mailbox. The functions associated with PEPGMON are shown in Figure 13-5.

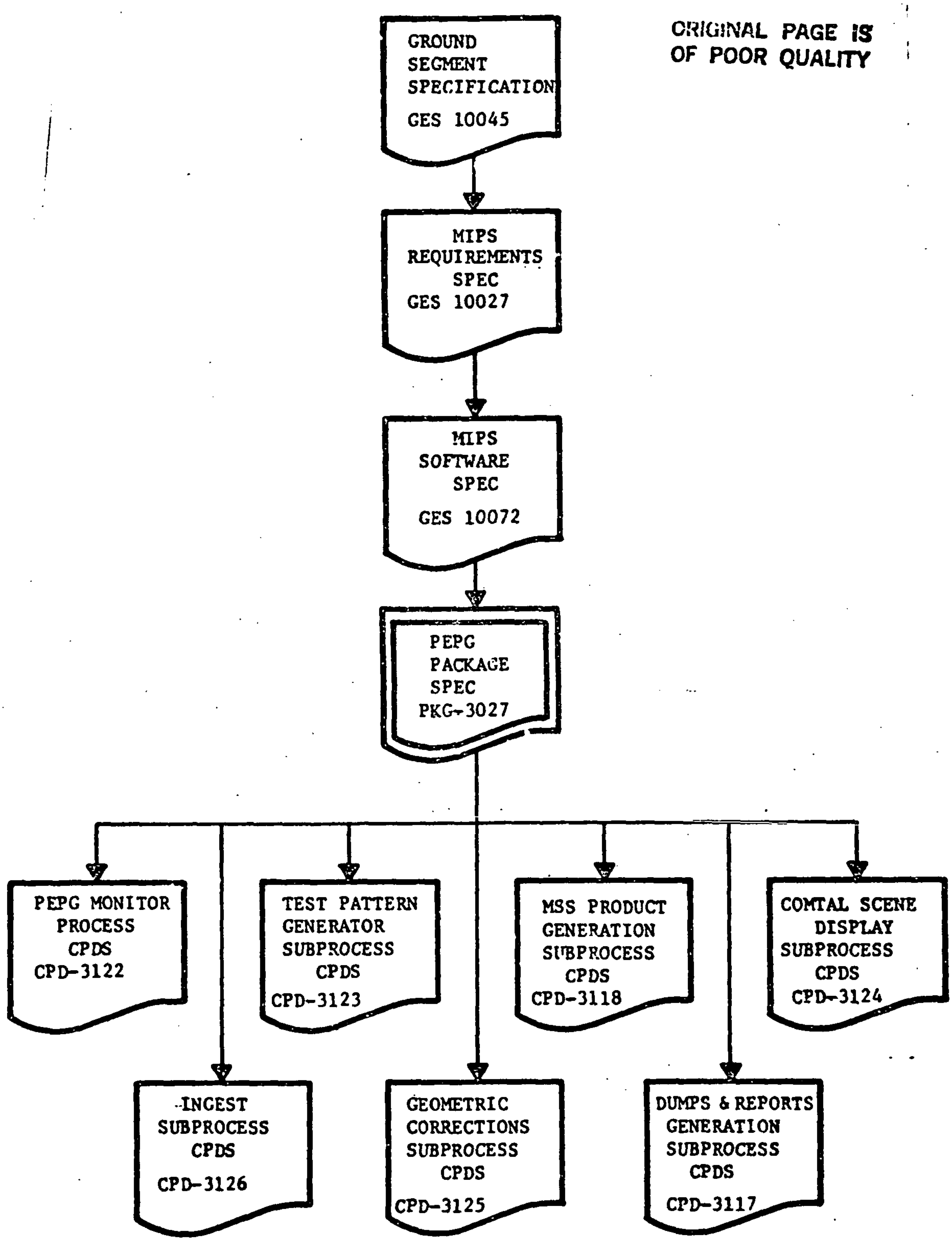

Figure 13-4. Specification Tree Showing PEPG Package Specification

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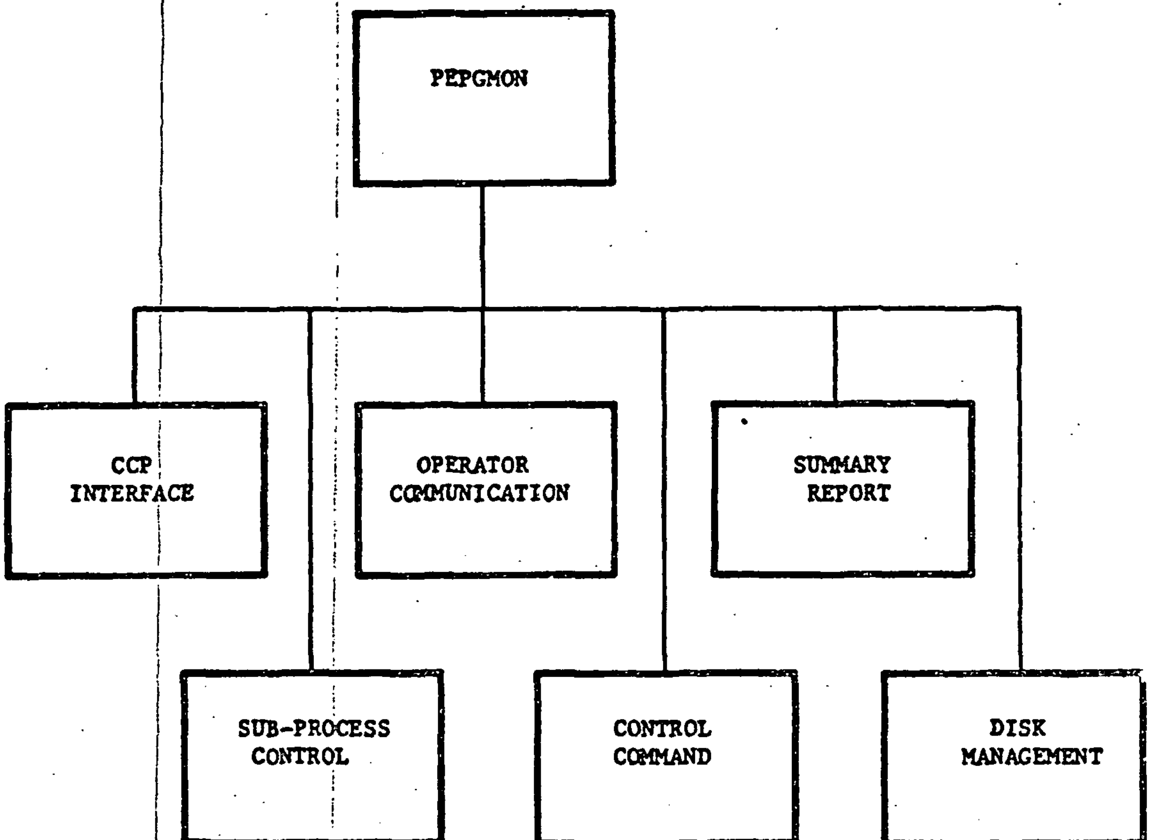

Figure 13-5. PEPGMON Functional Breakdown

13.4.2 MAGNETIC TAPE INGEST (INGEST)

The PEPG must accept scene data from HDT-AM, CCT-AM and CCP-PM and place it on disk. INGEST is the subprocess which coordinates this activity. It is activated and controlled by PEPGMON. The functions associated with INGEST are shown in Figure 13-6.

13.4.3 TEST PATTERN GENERATOR (TPG)

The PEPG must generate test pattern scene data and place it on disk in the same manner as INGEST. This function is useful for testing during the development phase and for routine line tests during production. The TPG provides this capability. The functions associated with TPG are shown in Figure 13-7.

13.4.4 GEOMETRIC CORRECTIONS (GEOCORR)

The PEPG must provide the capability to apply geometric corrections on partially corrected AM scenes to create fully corrected PM scenes. In order to provide this capability, GEOCORR performs the following functions:

a. Establishes mailbox communication with PEPGMON
b. Utilizes mailbox created for communication with PEPGMON for special events
c. Extracts the requested partially corrected video data and HAAT data from disk
d. Obtains the geometric correction matrix in the HAAT data
e. Applies the geometric corrections to each pixel
f. Returns the resultant fully corrected scene data and HAAT data to a new logical file designated to hold the fully corrected scene data
g. Sends completion information to PEPGMON.

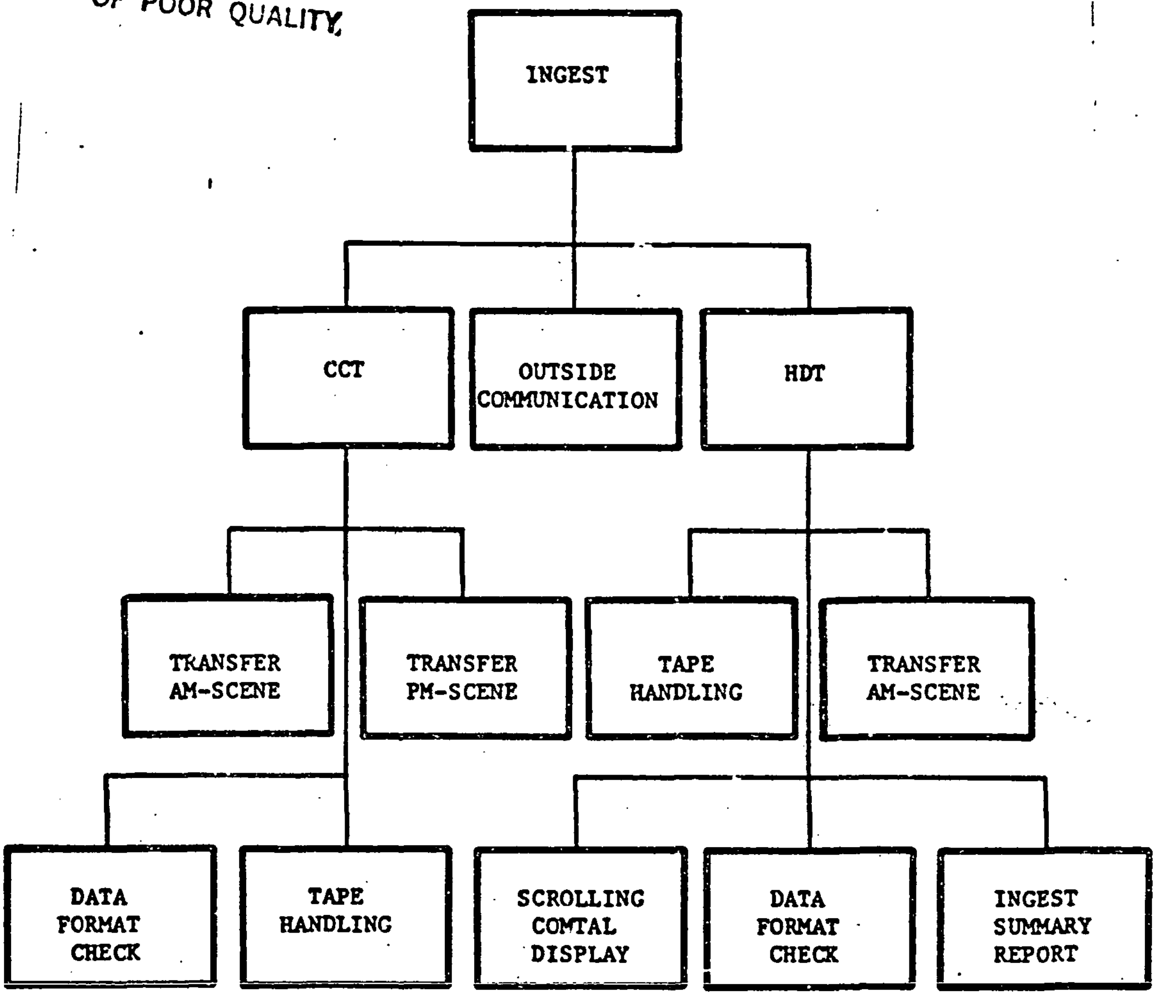

Figure 13-6. Ingest Functional Breakdown

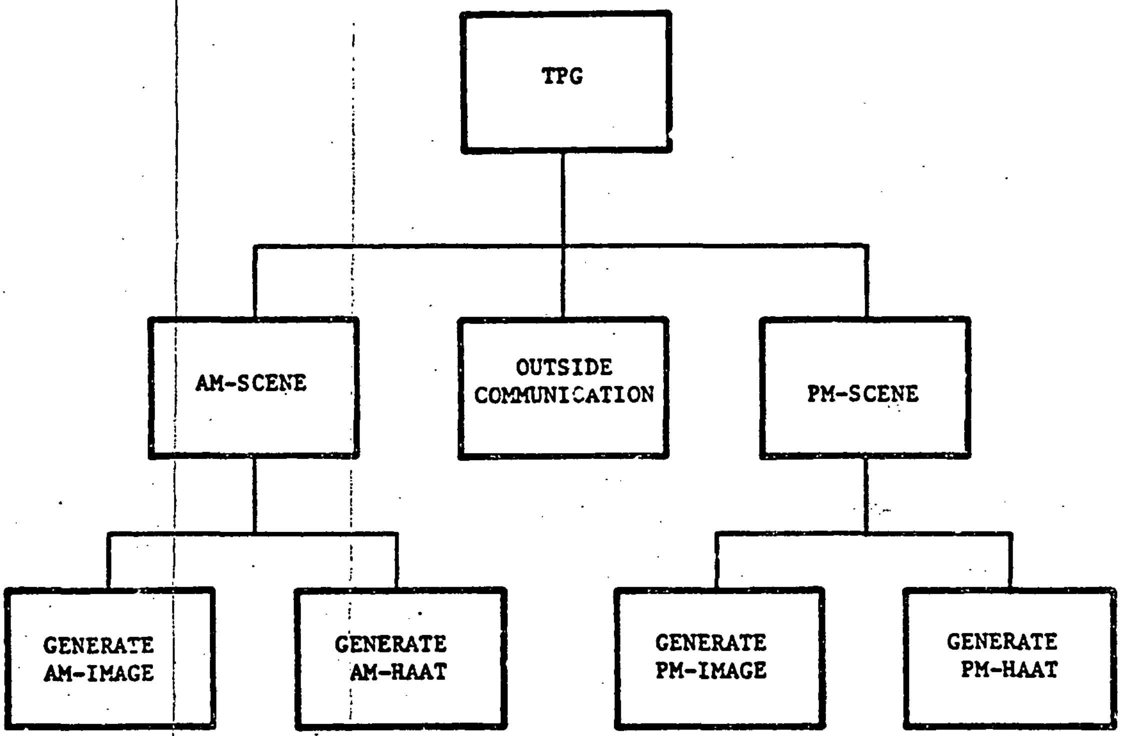

Figure 13-7. TPG Functional Breakdown

13.4.5 MSS PRODUCT GENERATION (MSSPROD)

The PEPG must provide the capability to produce selected MSS products. MSSPROD is the subprocess which coordinates their generation. It considers two types of products: CCTs and F241 film. This subprocess is activated and controlled by PEPGMON. Its functions are shown in Figure 13-8.

13.4.6 DUMPS AND REPORTS (DUMREP)

The PEPG produces several types of dumps and reports which consider scene data previously stored on disk. DUMREP is the subprocess which coordinates this activity. It is activated and controlled by PEPGMON. Its function and capabilities are shown in Figure 13-9.

13.4.7 COMTAL SCENE DISPLAYS (COMDIS)

The PEPG provides the capability to display selected scene data from disk on the Comtal display unit. COMDIS supports this capability. It is activated by the operator in an interactive mode on a separate terminal. It is run independently of other PEPG functions. This is accomplished using the DCL RUN command. The functions included in COMDIS are shown in Figure 13-10.

13.5 FREQUENCY OF OPERATION

PEPG activities occur on a routine basis daily. The total archive generation processing load for MIPS (three strings) is 200 newly acquired scenes (distributed on nine HDTs) each day with an allocation of 20 scenes of rework. Each newly acquired HDT-RM is processed to a single HDT-AM. The rework scenes

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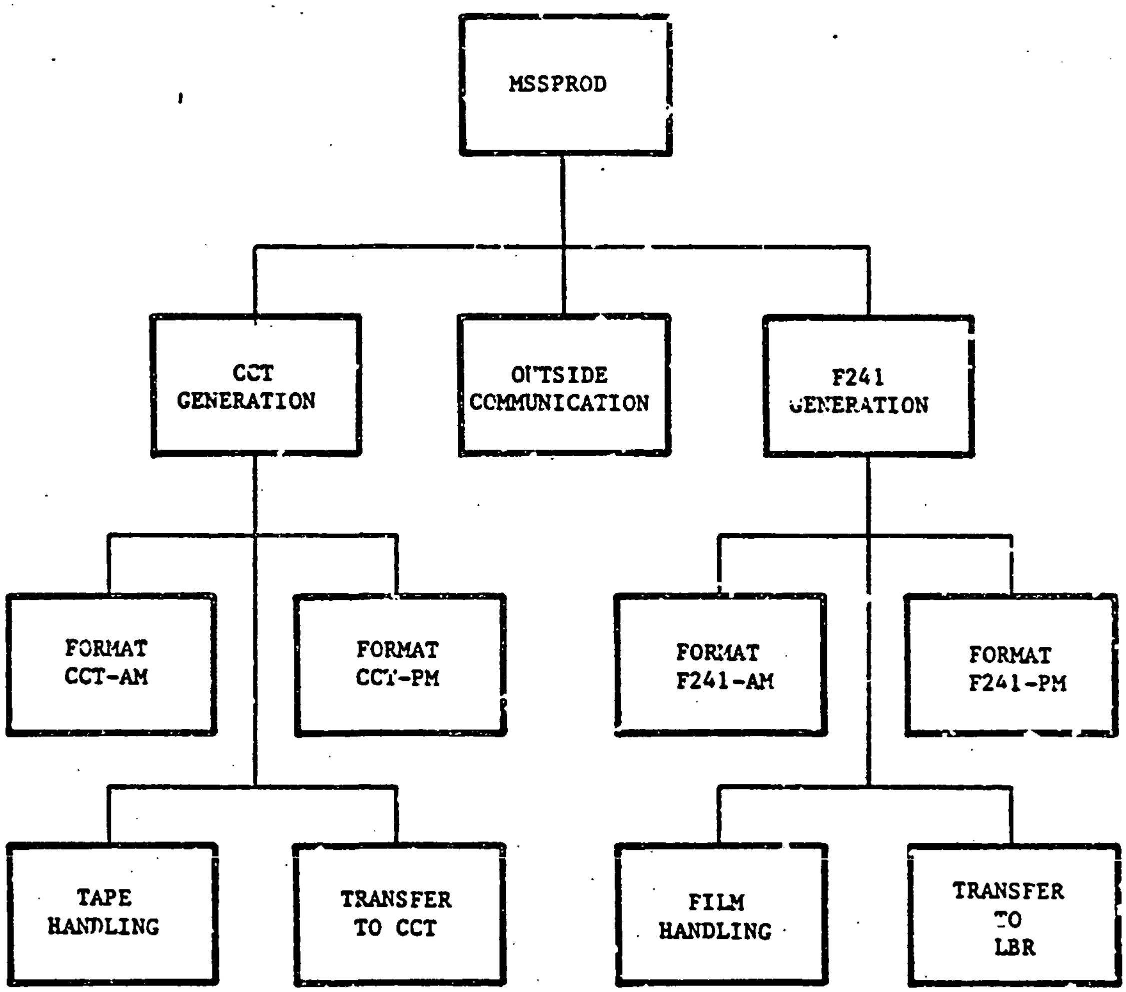

Figure 13-8. MSSPROD Functional Breakdown

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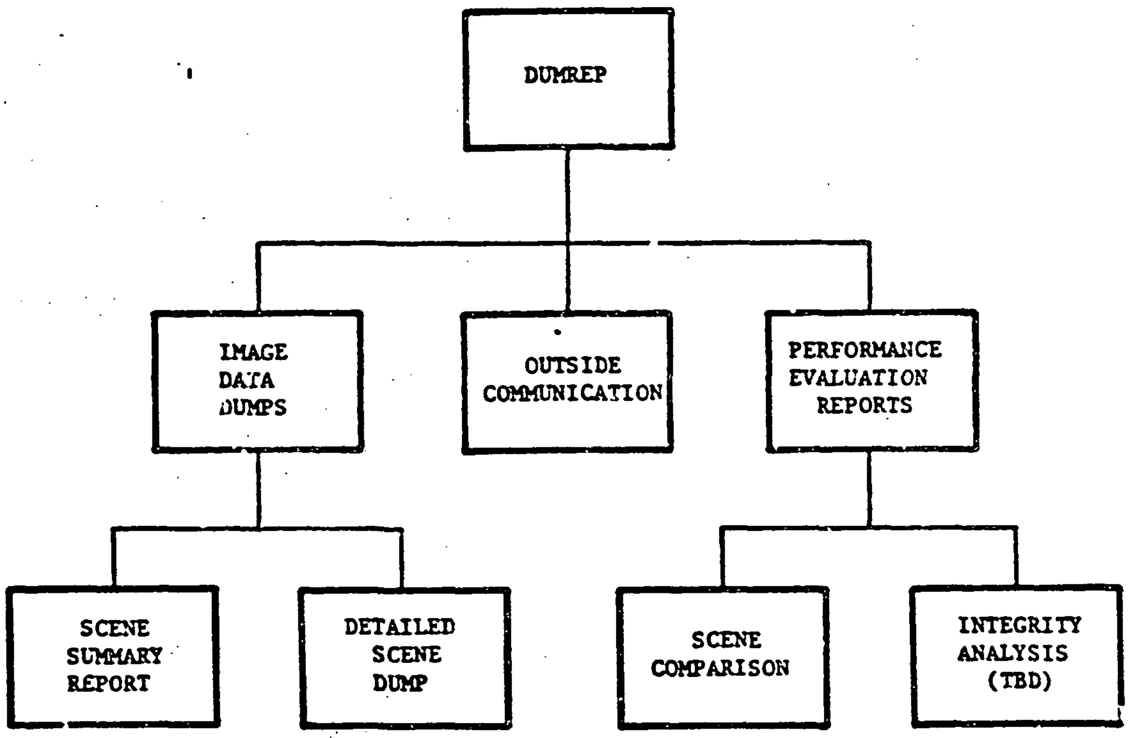

Figure 13-9. DUMPEP Functional Breakdown

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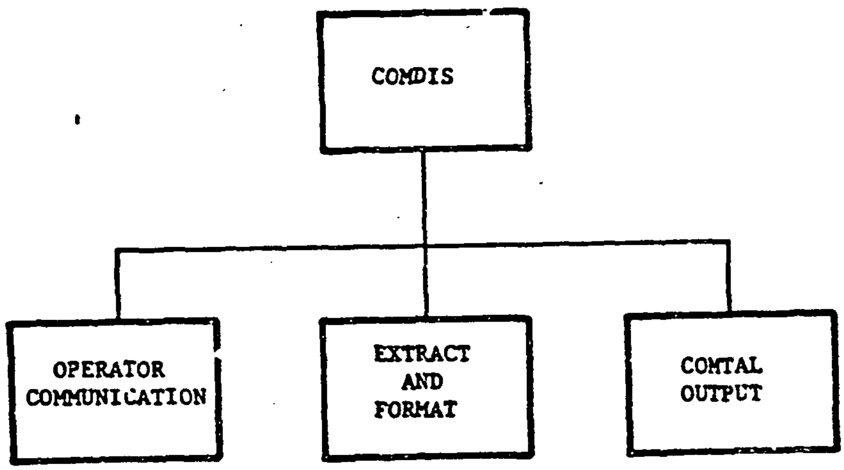

Figure 13-10. COMDIS Functional Breakdown

are randomly distributed on nine HDT-RMs and are processed multiple HDT-RM to HDT-AM. Thus, the archive generation output is 18 HDT-RM and 10 HDT-AM.

All 10 HDT-AMs are processed by PEPG for performance evaluation. For two of the HDT-AMs, 44 scenes are 100% sampled, and for the other eight HDT-AMs 35 scenes are 20% sampled. Of the sampled scenes, 35 are processed for ingest summaries and 44 are processed for both ingest and scene summaries.

The products generated are:

PRODUCT	QUANTITY
CCT-AM	2
CCT-PM	2
F241-AM	6
F241-PM	2
PE Reports and Detailed Dumps	2 for 2 scenes

PEPG - Performance Evaluation is allocated 7.6 hours of processing time on one MIPS string to accomplish the above tasks. This time is divided between PEPG and PEPG (QA), and distributed throughout the work day of 0800 to 2400 (two shifts).

13.6 DETAILED OPERATIONAL SEQUENCES

PEPG is run on part or all of a MIPS string of equipment, depending upon process request instructions. This paragraph contains several examples of typical activities which occur in PEPG processing. Exhibit 1 is an example of actions required to produce a CCT-AM, PE report, F241-PM and an F241-AM. Exhibit 2 is

an exampl : of detailed man-machine procedures to initialize the selected MIPS string to perform PEPG work orders.

PEPG EXHIBIT 1

PERFORMANCE EVALUATION PRODUCTS

The PEPG function has a wide variety of input/output combinations which may be requested either by an MMF process request or an engineering process request. In the interest of simplicity and clarity, this scenario will assume that MMF has processing requests for several products from a single HDT-AM.

a. CCT-AM for scene #2

b. PE report for scene #2

c. F241-PM for scene #7

d. F241-AM for scene #18.

It is also assumed that MIPS string #3 has been allocated the PEPG processing function.

The F241-PM film will be produced in two stages. First, MIPS will produce a CCT-PM, then 241 mm film will be produced on the TIPS string.

Process requests for these products will be generated after the HDT-AM has completed the product evaluation phase and has been released by the QA group. At that time, the following process requests will be generated by the MMF:

a. CCT process request (MIPS string #3)

    1. CCT-AM for scene #2

    2. CCT-PM for scene #7

b. Non-media process request (MIPS string #3)

    1. PE report for scene #2

c. Film process request (TIPS)

1. F241-AM for scene #18

The process request for the F241-PM film will be generated after MMF receives the process request feedback for the CCT-PM.

Figures 13-11 through 13-13 are the data flow diagrams for the MIPS and TIPS strings. The following text describes each function.

CCT PROCESS REQUEST (FIGURE 13-11)

1. MMF generates a move order for HDT-AM #XYZAM to be moved to MIPS string #3. The tape archive operator performs the move operation and logs it.
2. MMF generates the CCT and non-media process requests for transfer to MIPS string #3.
3. MIPS string #3 transfers the process requests and places them in queue with other process requests. The operator may reorder the queue at his option.
4. The MIPS operator requests a set of CCT-AM labels from MMF and receives the next sequential labels. He then inputs the CCT identification to the MIPS string via a terminal.
5. The operator attaches the CCT labels and mounts the blank tapes on the TU-45 drives.
6. When the process requests reach the front of the queue, MIPS will issue an HDT mount request. It is assumed that the queue is ordered,

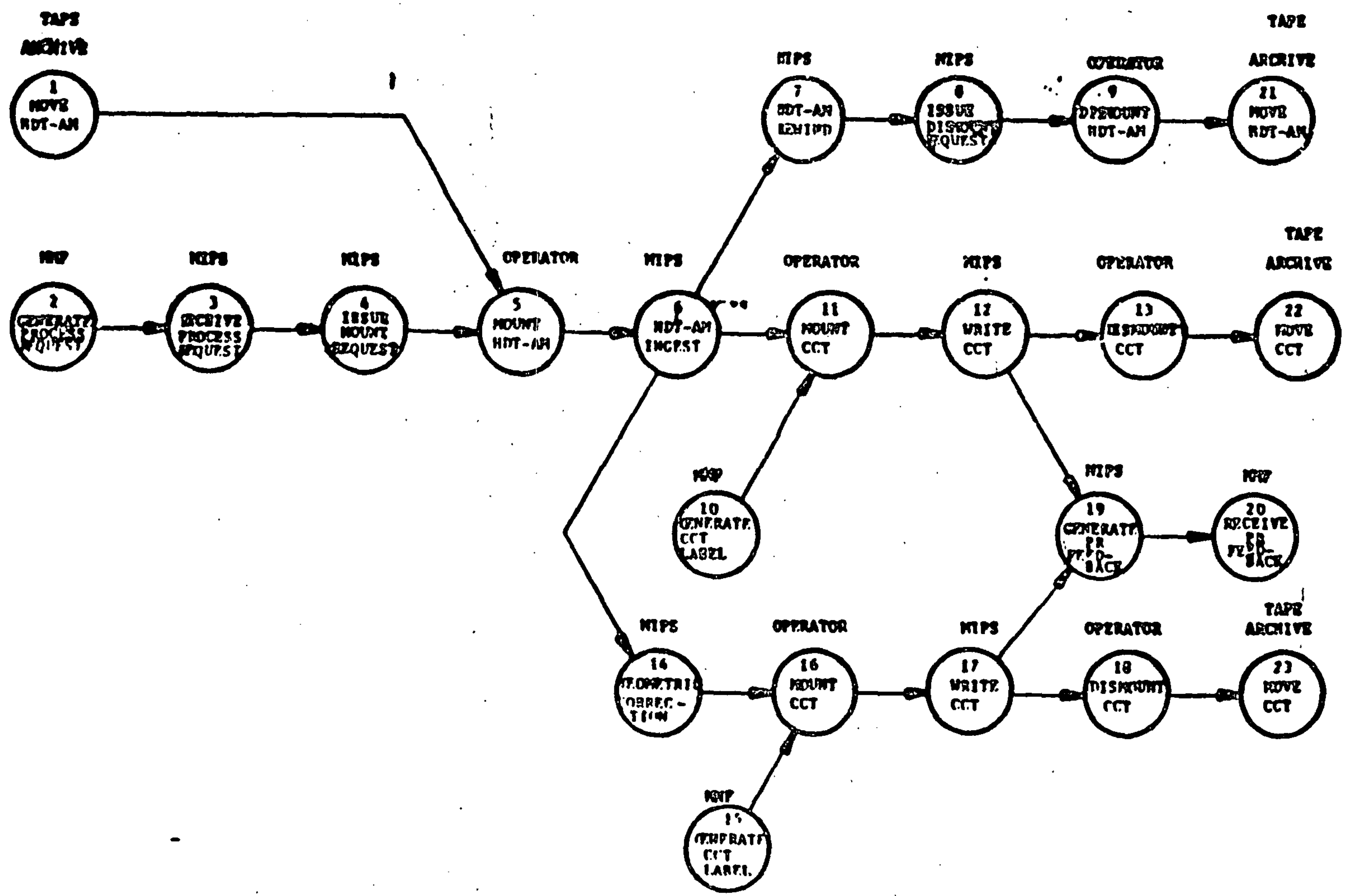

Figure 13-11. CCT Generation Operational Scenario

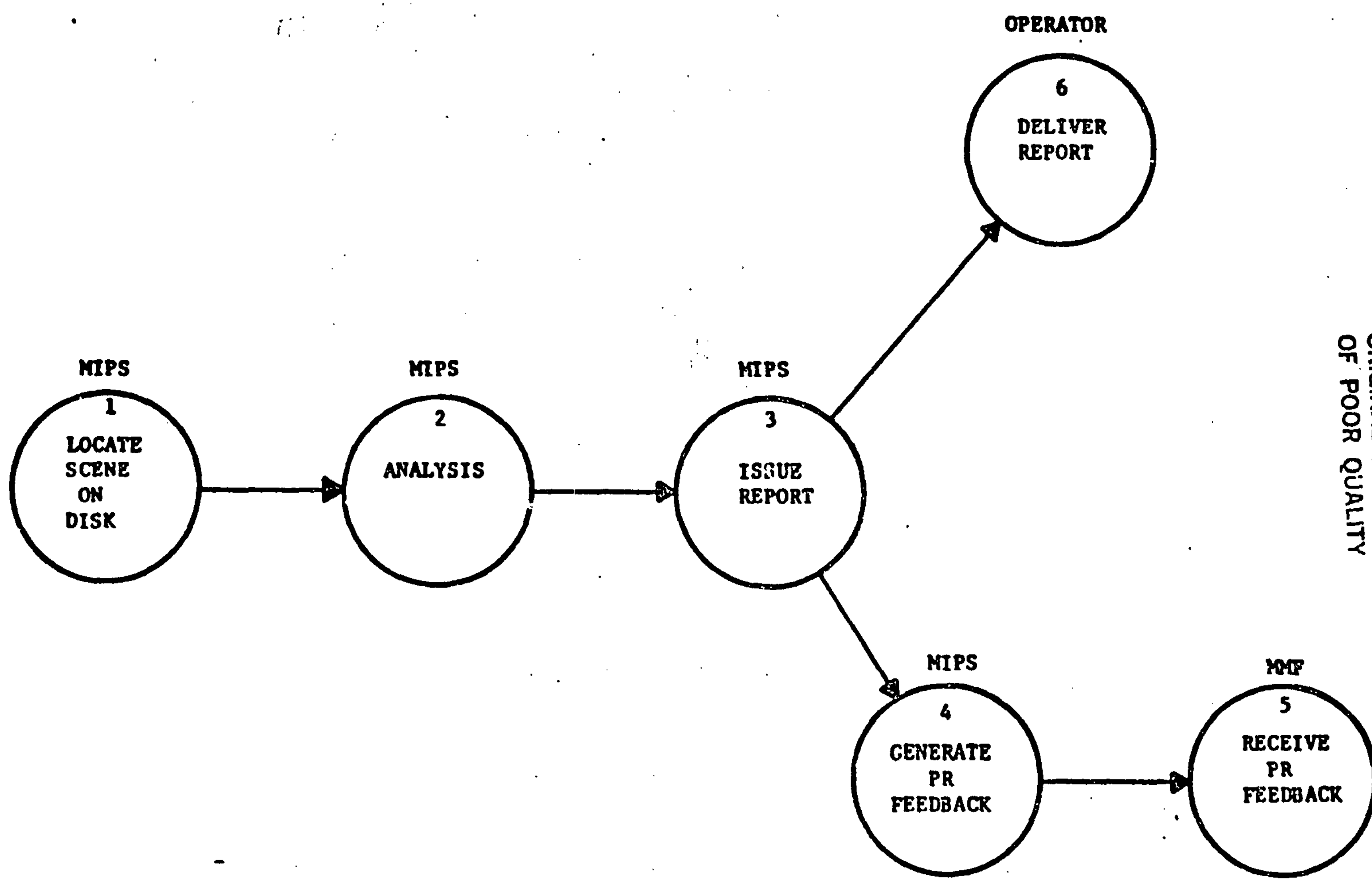

Figure 13-12. PE Report Generation Operational Scenario

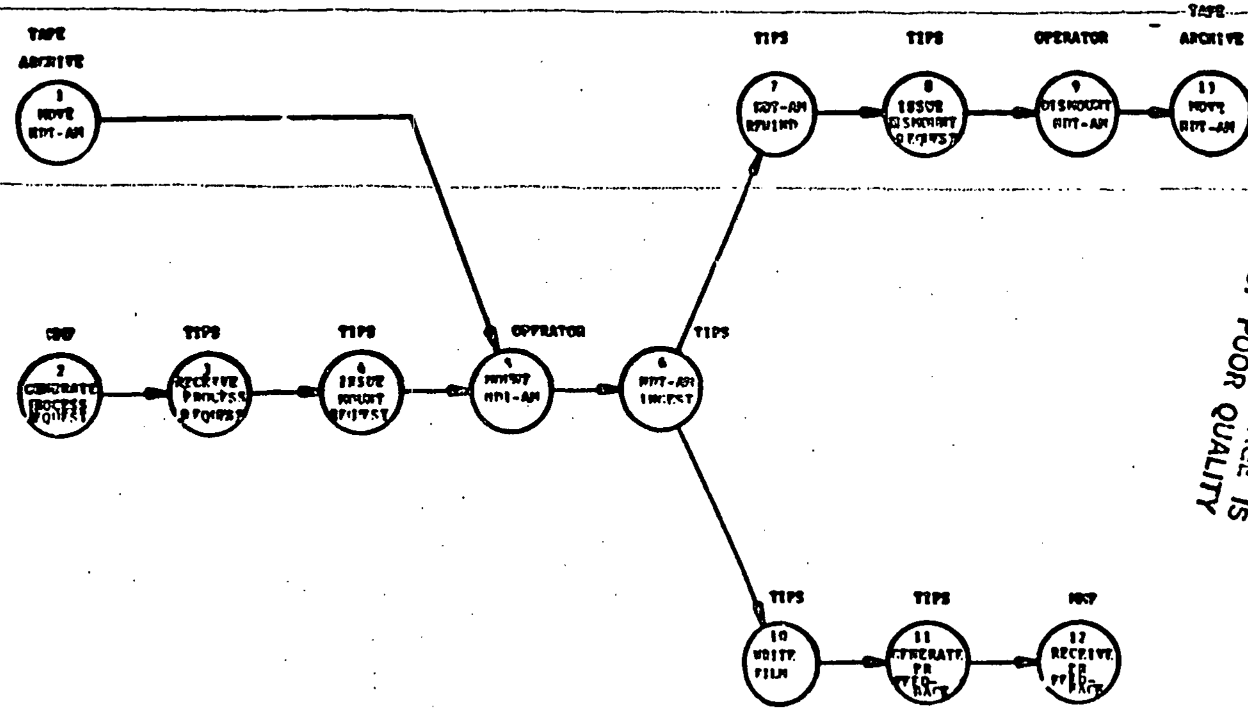

Figure 13-13. F241-AM Generation Operational Scenario

either as received or as reordered by the operator, such that the CCT process request is followed by the non-media process request.

7. The MIPS operator mounts and positions HDT-AM #XYZAM in response to the HDT mount request. He then informs the MIPS string that the HDT mount is complete.

8. MIPS will search the HDT-AM to the start of scene #2, ingest it, then search to the start of scene #7 and ingest it.

9. After the ingest of scenes #2 and #7, the HDT is rewound.

10. MIPS issues a dismount request to the operator.

11. The MIPS operator dismounts the HDT-AM in response to the HDT dismount request.

12. MIPS writes the first half of scene #2 to the blank CCT. The operator dismounts the CCT and mounts another blank CCT. MIPS writes the rest of scene #2 to the CCT.

13. The MIPS operator dismounts the scene #2 CCT-AM.

14. MIPS performs the geometric correction of scene #7 and writes it to disk.

15. The MMF operator requests a set of CCT-PM labels from MMF, and receives two labels (one for bands 1 and 2 and the other for bands 3 and 4). He then inputs the CCT identification to the MIPS string via a terminal.

16. The operator attaches the CCT labels and mounts the blank tapes on the TU-45 drives.

17. MIPS writes scene #7 to the blank CCTs.

18. The MIPS operator dismounts the scene #7 CCT-PM.

19. Upon completion of writing of the CCTs, MIPS will generate the CCT process request feedback.

20. MMF transfers the process request feedback file and the CCT directories.

21, 22, 23. The MIPS operator logs out the tapes and MMF will issue a move order for the HDT-AM and the CCTs. The tape archive operator moves the tapes into the tape archive area.

NON-MEDIA PROCESS REQUEST (FIGURE 13-12)

1. At the conclusion of the CCT writing, MIPS will start the next process request, which is a PE report of scene #2. MIPS will scan its store of scenes to determine that it has scene #2 on disk. MIPS will proceed to process the scene from disk.

2. MIPS will perform the analysis as required by the process request.

3. MIPS prints the PE report.

4. At the conclusion of the report MIPS will generate the non-media process request feedback.

5. MMF transfers the non-media process request feedback file.

6. The MIPS operator delivers the PE report to the evaluator's mailbox.

F241-AM PROCESS REQUEST (FIGURE 13-13)

1. MMF generates a move order for HDT-AM to be moved to the TIPS string. The tape archive operator will perform the move operation and log it.

2. MMF generates a film process request for transfer to the TIPS string.

3. TIPS transfers the process request and places it in queue with other process requests.
4. When the film process request reaches the front of the queue, TIPS will issue an HDT mount request to the operator.
5. The operator mounts and positions HDT-AM in response to the HDT mount request. He then informs the TIPS string that the HDT mount is complete.
6. TIPS will search to the start of scene #18 and ingest it.
7. TIPS will rewind the HDT-AM at 300 IPS.
8. TIPS will issue an HDT dismount request to the operator.
9. The operator dismounts the HDT-AM in response to the HDT dismount request.
10. The operator mounts the 241mm film.
11. TIPS writes scene #18 to 241 mm film.
12. TIPS generates the process request feedback.
13. MMF transfers the F241-AM process request feedback file.
14. The operator dismounts the 241mm film.
15. The TIPS operator logs out the HDT-AM and film and MMF generates move orders for HDT-AM to be transferred to the tape archive area and film to be transferred to the Photo Lab.

F241-PM PROCESS REQUEST

The F241-PM process request follows the scenario of the F241-AM process request, except that the scene is ingested from the CCT-PM for scene #7.

PEPG EXHIBIT 2

SCENARIO 1: SYSTEM LOG ON AND STATUS DISPLAY

Objective

This procedure is designed to demonstrate the operator's LOG ON to the MIPS string and the system displays of status and capabilities.

Test Data

Scenario 1 does not require special test data.

Expected Outputs

At the conclusion of Scenario 1, the MIPS string will be operational and ready to perform normal MIPS functions.

STEP	ACTION	SYSTEM RESPONSE	COMMENTS
1	PRESS RETURN KEY	THE SYSTEM WILL RESPOND "USERNAME:"	REQUESTS LOGIN
2	TYPE "MIPS (C/R)"	THE SYSTEM WILL RESPOND "PASSWORD:"	REQUEST PASS-WORD
3	TYPE "MIPS (C/R)"	MIPS MENU IS DISPLAYED AS SHOWN IN FIGURE 13-14	REQUESTS COMMAND FROM MENU
4	TYPE "IN (C/R)"	MIPS STARTS UP PCE LOGGER AND ATTN THE MESSAGE: PACKAGE CONTROL EXEUCTIVE IS ACTIVATED WILL BE PRINTED ON THE SYSTEM CONSOLE	INITIALIZE THE STRING
5	TYPE "CH (C/R)"	THE SYSTEM WILL RESPOND WITH SYSTEM CHARACTERISTICS MENU AS SHOWN IN FIGURE 13-15 AND PROMPT "PACKAGE OPERATION:"	SET UP STRING CHARACTERISTICS
6	TYPE "SH (C/R)"	THE SYSTEM WILL RESPOND BY DISPLAYING THE CURRENT STRING CHARACTERISTICS AS SHOWN IN FIGURE 13-16	
7	TYPE "EX(C/R)"	THE "FUNCTION:" PROMPT WILL BE OUTPUT.	
8	TYPE "CA (C/R)"	THE SYSTEM CAPABILITIES MENU WILL BE DISPLAYED AS SHOWN IN FIGURE 13-17 AND THE "CAPABILITIES" PROMPT OUTPUT	SET UP STRING CAPABILITIES
9	TYPE "SH (C/R)"	THE SYSTEM CAPABILITIES WILL BE DISPLAYED AS SHOWN IN FIGURE 13-18 AND THE "CAPABILITIES" PROMPT OUTPUT.	
10	TYPE "EX (C/R)"	THE "FUNCTION:" PROMPT WILL BE OUTPUT	
11	TYPE "ATTN (C/R)"	THE SYSTEM WILL PROMPT: ENTER PACKGE/PROCESS ID	
12	TYPE "CCP (C/R)"	THE SYSTEM WILL PROMPT: ENTER MESSAGE (66 CHARACTERS)	

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```
******************************* MIPS COMMAND MENU ********************************
*                                                                                *
:  IN(IT)    String Initialization              AT(TN)     Attention Utility     *
:  AL(LOC)   Show Disk Allocation               OD(P)      On-Line Display Utility *
:  CH(AR)    Set Package Characteristics        CO(MD)     COMTAL Display Utility *
:  CA(PS)    Set String Capabilities            ID(UMP)    Interactive Dump Util. *
:                                               FM(OUNT)   70mm Film Mount Utility *
:  MA(G)     MSS Archive Generation                                              *
:  MC(CA)    Manual Cloud Cover Assessment      QM(U)      Queue Manipulation    *
:  QA(F)     Quality Assurance Film Gen.        MI(N)      MMF Input Process     *
:                                                                                *
:  PE(PG)    Perf. Eval. Product Gen.           EP(IC)     Engineering PR Creation *
:                                               ST(AT)     Package Status Display *
:                                                                                *
:  DI(G)     Map Digitizing                     HE(LP)     Redisplay this Menu   *
:  CP(GEN)   Control Point Generation           EX(IT)     Exit String Control   *
:  FA(IL)    Control Point Failure Display                                       *
:                                                                                *
:                                                                                *
:                                                                                *
:                                                                                *
**********************************************************************************
```

Figure 13-14. MIPS Command Menu

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```
unction: CH
?21HJK
J
********************** SET PACKAGE CHARACTERISTICS MENU ***********************
                                                                              *
      EN          Enable MOU package autostart                                *
      DIS         Disable MOU package autostart                               *
      POL         Set time polling value for MIN package autostart            *
      PEP(P)/(T)  Set PEPG lifespan to PERMANENT or TEMPORARY                 *
      PEP(E)/(D)  Enable or Disable PEPG singlecycle                          *
      MAG(P)/(T)  Set MAG lifespan to PERMANENT or TEMPORARY                  *
      MAG(E)/(D)  Enable or Disable MAG singlecycle                           *
      MCA(P)/(T)  Set MCCA lifespan to PERMANENT or TEMPORARY                 *
      MCA(E)/(D)  Enable or Disable MCCA singlecycle                          *
      QAF(P)/(T)  Set QAF lifespan to PERMANENT or TEMPORARY                  *
      QAF(E)/(D)  Enable or Disable QAF singlecycle                           *
      CFG(P)/(T)  Set CFG lifespan to PERMANENT or TEMPORARY                  *
      CFG(E)/(D)  Enable or Disable CFG singlecycle                           *
      ALL(P)/(T)  Set ALL package lifespans to PERMANENT or TEMPORARY         *
      ALL(E)/(D)  Enable or Disable ALL singlecycle                           *
      SH          Show current package settings                               *
                                                                              *
      HE(LP)   Display this menu                                              *
      EX(IT)   Exit to string control menu                                    *
                                                                              *
*******************************************************************************
```

Figure 13-15. Set Packages Characteristics Menu

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```
PACKAGE OPERATION: SH


    MIN POLLING DISABLED
    MOU AUTOSTART OFF

    PKG     LIFESPAN     SINGLE CYCLE
    ---     --------     ------------
    MAG       TEMP            OFF
    MCA       TEMP            OFF
    QAF       TEMP            OFF
    PEP       TEMP            OFF
    CPG       TEMP            OFF
```

Figure 13-16. Show Package Operation Display

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```
****************************** SET CAPABILITIES MENU ******************************
*       AL(L)  Process ALL capabilities                                            *
*       NO(NE) Do not process any capabilities                                     *
*                                                                                  *
*       AG     Process MSS archive generation process requests                     *
*       NAG    Do not process MSS archive generation process requests              *
*                                                                                  *
*       LB     Process control point library build.                                *
*       NLB    Do not process control point library build.                         *
*                                                                                  *
*       FP     Process file product generation process requests                    *
*       NFP    Do not process file product generation process requests             *
*                                                                                  *
*       TP     Process CCT product generation process requests                     *
*       NTP    Do not process CCT product generation process requests              *
*                                                                                  *
*       HR     Process HDT dump/report                                             *
*       NHR    Do not process HDT dump/report                                      *
*                                                                                  *
*       SH(OW) Show current capabilities                                           *
*       EX(IT) Exit to the string control menu                                     *
*       HE(LP) Display this menu                                                   *
************************************************************************************
```

Figure 13-17. Set Capabilities Menu

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```
CAPABILITIES:.ALL
CAPABILITIES: SH

String capabilities:
    Process MSS archive generation process requests.
    Process control point library build.
    Process file product generation process requests.
    Process product generation process requests .
    Process HDT dump/report.

CAPABILITIES: [illegible]
```

Figure 13-18. String Capabilities

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
13	TYPE "ALL PEP DISKAAAAAAAAAAAA(C/R)"	THE SYSTEM WILL RESPOND: MESSAGE RECEIVED: AND PROMPT FUNCTION:	
14	TYPE "ATTN CCP AL PEP DISKBBBBBBBBBBBB(C/R)"	THE SYSTEM WILL RESPOND:	MESSAGE RECEIVED: AND PROMPT FUNCTION:
15	TYPE "ALL (C/R)"	THE SYSTEM PROMPT FOR PACKAGE NAME	SHOW DISKS ALLOCATED TO PEPG
16	TYPE "PEP (C/R)"	THE DISKS ALLOCATED TO PEPG WILL BE DISPLAYED, AS SHOWN IN FIGURE 13-19 AND THE "FUNCTION:" PROMPT OUTPUT	
17	TYPE "DMU (C/R)"	THE DMU MENU WILL BE DISPLAYED AS SHOWN IN FIGURE 13-20 AND THE "DMU" PROMPT OUTPUT	SHOW THAT THERE ARE NO PREVIOUSLY ACTIVE PROCESS REQUESTS OR WORK ORDERS
18	TYPE "ACPR (C/R)"	THE "DMU" PROMPT WILL BE OUTPUT, INDICATING THERE ARE NO ACTIVE PROCESS REQUESTS	
19	TYPE "EX (C/R)"	THE "FUNCTION:" PROMPT WILL BE OUTPUT.	
20	TYPE "ID (C/R)"	THE INTERACTIVE DUMP COMMAND MENU AS SHOWN IN FIGURE 13-21 WILL BE DISPLAYED AND THE "IND:>" PROMPT OUTPUT	SHOW THAT THERE ARE NO SCENES ALL ON THE DISK
21	TYPE "TY A (C/R)"	THE ERROR MESSAGE "CANNOT OPEN SCENE DIRECTORY" AND THE "IND:>" PROMPT WILL BE OUTPUT	
22	TYPE "EX (C/R)"	THE "FUNCTION:" PROMPT WILL BE OUTPUT	
23	TYPE "ES (C/R)"	THE SYSTEM WILL RESPOND "$"	
24	TYPE "Q(C/R)"	THE BATCH QUEUE WILL BE DISPLAYED AS SHOWN IN FIGURE 13-22	NEWLOG WILL BE IN QUEUE. THIS IS THE LOGGER

OPLAN

```
Function: ATTN CCF AL PEP DISKAAAAAAAAAAAA
   MESSAGE RECEIVED
Function: ATTN CCF AL PEP DS\S\ISKBBBBBBBBBBBB
   MESSAGE RECEIVED
Function: ALL
[illegible]
USR: ENTER ALL OR PKG NAME?:PEP

PACKAGE MNEMONIC        DISK NAME
----------------     -------------------

    PEP               DISKAAAAAAAAA
                      DISKBBBBBBBBB
                      PEPGIMAGEDISK
                      TEMPIMAGEDISK
Function: DMU
```

Figure 13-19. Disk Allocation Display

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```
STRING:  MIPS1               DMU COMMAND SUMMARY               DATE:15-NOV-1981
                                                               TIME:09:57:06.51

ENTER THIS...                          TO DO THIS...
-------------      ----------------------------------------------------------
DISP    . . . . . . SELECT A DMU DISPLAY
EXIT    . . . . . . EXIT THE DMU SESSION
HELP    . . . . . . DISPLAY THIS MENU
PWOR    . . . . . . CHANGE THE (P)RIORITY OF A GIVEN (W)ORK (OR)DER
WCOM    . . . . . . ATTACH A (COM)MENT TO A WORK ORDER
POSI    . . . . . . CHANGE THE SCHEDULING (POSI)TION FOR ONE WORK ORDER
RWOR    . . . . . . (R)EWORK A (W)ORK (OR)DER
RQUE    . . . . . . (R)ESEQUENCE THE ENTIRE SCHEDULING (QUE)UE
FLPR    . . . . . . (FL)USH A (P)ROCESS (R)EQUEST
FWOR    . . . . . . (F)LUSH A (W)ORK (OR)DER
RSET    . . . . . . (SET) WORK ORDER TO (R)EADY STATE
CSET    . . . . . . (SET) WORK ORDER TO (C)OMPLETE STATE
HSET    . . . . . . (SET) WORK ORDER TO (H)OLD STATE
SBOU    . . . . . . (S)ET A-TAPE (BOU)NDARY
CBOU    . . . . . . (C)LEAR A-TAPE (BOU)NDARY
```

Figure 13-20. DMU Command Summary

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```
Function: ID

ENTER THIS...............................TO DO THIS

TY(PE),(A OR P)..........................DEFINE AM OR PM DATA
LI(ST)...................................DISPLAY LIST OF  AVAILABLE SCENES
SC(ENE),(SLOT NUMBER)....................SELECT SCENE 1
S2(CENE),(SLOT NUMBER)...................SELECT SCENE 2 ,  FOR SCENE COMPARISON ONLY
DE(VICE),(P OR T)........................CHOOSE PRINTER OR TERMINAL  FOR OUTPUT
RE(PORT),(SUM,PER,FOU,UND,CMP)...........CHOOSE CURRENT REPORT TYPE
PA(RAMETER)..............................ENTER PARAMETERS FOR  CURRENT REPORT TYPE
SH(OW)...................................SHOW CURRENT PARAMETERS  FOR THIS REPORT
PR(INT)..................................PRINT THE REPORT
SA(VE),(SLOT NUMBER).....................SET NO PURGE FLAG
PU(RGE),(SLOT NUMBER)....................REMOVE NO PURGE FLAG
HE(LP)...................................REPEAT MENU
EX(IT)...................................LEAVE INTDUM

IND: >TY A
U   CANNOT OPEN SCENE DIRECTORY

IND: >EX
END INTDUM
```

Figure 13-21. Interactive Dump Command Menu

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```
Function: ES
$ Q

  * Batch queue 'SYS$BATCH' Joblim=10, Basepri=2, Swap

    Current Job  150 STAGE1       NEWLOG   Pri=8, 15-NOV-1981 09:27

  * Batch queue 'SYS$REALTIME' Joblim=10, Basepri=8, Swap
$.S
```

Figure 13-22. Batch Queue Display

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STEP	ACTION	SYSTEM RESPONSE	COMMENTS
25	TYPE "S(C/R)"	A DISPLAY OF ALL PROGRAMS RUNNING WILL BE OUTPUT AS SHOWN IN FIGURE 13-23	PCE_STA WILL BE IN QUEUE. THIS IS THE CCP EXECUTIVE.
26	TYE "DIR [STAGE1.LOGGER] (C/R)"	LOGFILE.DAT;1 SHOULD BE PRESENT.	
27	TYPE "SHOW DEVICE DB (C/R)"	THE DISK DEVICES CURRENTLY ON THE SYSTEM WILL BE DISPLAYED. NOTICE THE AMOUNT OF FREE DISK SPACE ON M1D4. THIS WILL BE COMPARED TO THE AMOUNT OF DISK SPACE ON M1D4 AFTER ALL SCENARIOS ARE OVER.	
28	TYPE "LO (C/R)"	LOG OFF SYSTEM, THIS IS THE END OF SCENARIO 1.	

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```
  VAX/VMS  Processes on          15-NOV-1981 09:37:01.36      Uptime  0 19:47:03
  Pid      Process Name       UIC   State Pri Dir. I/O     CPU        Page flts Ph.Mem
00010000 NULL              000,000 COM    0          0 19:22:00.66        0     0
00010001 SWAPPER           000,000 HIB   16          0 00:00:02.20        0     0
00060025 PCE_STA           021,005 LEF   10          8 00:00:00.38      131   100
00040026 _JOB150           021,005 LEF    9         28 00:00:01.56      165    82 B
00010027 EVL               001,004 HIB   10          3 00:00:00.36      102    96 N
00030028 REMACP            001,003 HIB    8          1 00:00:00.09       25    18
00010029 NETACP            001,004 HIB   15        395 00:00:12.11      201    80
0008002A STAGE1            021,005 CUR   11         46 00:00:03.85      809   119
0001002B ERRFMT            001,006 HIB    8        324 00:00:03.28       29    32
0001002C OPCOM             001,004 LEF    8        100 00:00:01.28       33    42
0001002D JOB_CONTROL       001,004 HIB    9        130 00:00:03.96       33   100
0001002E DRAOACP           001,003 HIB   15       6720 00:01:10.48     1091    91
0002002F PRTSYMB1          001,004 HIB    8        360 00:00:28.02       17    46 S
```

Figure 13-23. Running Programs Display

13.7 ERROR HANDLING

When processing errors are encountered in PEPG subprocesses, appropriate action is taken and an error message is sent to PEPGMON which in turn records and logs a message to the operator. For each error encountered, the subprocess which encountered the error, the error type, and the action taken by the subprocess are logged to the operator. The action taken for each error is dependent on the severity of the error and where the error is encountered. The logging of error messages to the operator is initiated by the subprocess by notifying PEPGMON of the error through the mailbox established for PEPGMON to subprocess communication. PEPGMON sends the error message to the operator utilizing the LOGGER utility. Table 13-2 lists all error messages, their source, and appropriate action taken by PEPG and the operator.

13.8 INPUT AND OUTPUT DESCRIPTION AND EXAMPLES

This paragraph consists only of an index telling where to find samples of PEPG input/output formats. The volume of pages required to add samples to this document is impractical.

PEPG Inputs

DESCRIPTION OF INPUT	FORMAT DESCRIPTION
Operator Inputs	LSD-IGF-PKG-3027, Package Design Performance Evaluation Product Generation
HDT-AM (BSQ)	GES 10077, HDT-AM Data Format Control Book Volume VI Appendix C

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Table 13-2. PEPG Error Responses (Page 1 of 3)

ERROR CATEGORY	ERROR	SOURCE	PEPG ACTION	OPERATOR ACTION
IMAGE FILE ALLOCATION	EXPECTED IMAGE DISK NOT ONLINE	PEPGMON	ALLOW OPERATOR TO MOUNT DISK VIA VMS OR CONTINUE WITH FEWER DISKS THAN EXPECTED	EITHER MOUNT NEW DISK OR AUTHORIZE RUNNING WITH LESS DISK SPACE
	DISK SPACE EXHAUSTED	PEPGMON, INGEST	DO NOT INGEST ANY FURTHER SCENES AND PROCESS THE SCENES ALREADY INGESTED. NOTIFY OPERATOR.	NONE
DISK FILE ACCESS DISK FILE ACCESS	DISK READ/WRITE ERROR	ALL SUBPROCESSES	NOTIFY OPERATOR AND TERMINATE	NONE
SYSTEM SOFTWARE	ERROR USING VMS SYSTEM S/W	ALL SUBPROCESSES	NOTIFY OPERATOR AND TERMINATE	NONE
CCP COMMUNICATION	MAILBOX READ/WRITE ERROR	PEPGMON	DEPENDING ON WHICH MAILBOX, EITHER SEND UNSUCESSFUL CODE TO CCP OR ABORT ITSELF. NOTIFY OPERATOR.	NONE
	WORK ORDER MALFORMED	PEPGMON	NOTIFY OPERATOR AND TERMINATE	NONE
WORK ORDER INFORMATION	INVALID WORK ORDER FIELD	ALL SUBPROCESSES	SKIP PARTICULAR SCENE IF APPROPRIATE AND TERMINATE IF NOT. NOTIFY OPERATOR	NONE
	EXPECTED DISK RESIDENT SCENE NOT FOUND	ALL SUBPROCESSES	NOTIFY OPERATOR AND TERMINATE	NONE
	EXPECTED LBR CALIBRATION DATA NOT FOUND	NSSPROD	NOTIFY OPERATOR AND TERMINATE	NONE
PEPGMON/SUBPROCESS COMMUNICATION	MAILBOX READ/WRITE ERROR	ALL SUBPROCESSES	NOTIFY OPERATOR AND TERMINATE	NONE
HCS COMMUNICATION	HDT-AH CAN'T BE MOUNTED OR POSITIONED	INGEST	TERMINATE	NONE
	HCS HAS TERMINATED	INGEST	TERMINATE	NONE
	ECC THRESHOLD ERROR	INGEST	NOTIFY OPERATOR AND PROCEED	NONE
AVAILABLE RESOURCES	RESOURCES NOT AVAILABLE	PEPGMON	ALLOW OPERATOR TO MAKE RESOURCES AVAILABLE AND PROCEED. OTHERWISE TERMINATE	MAKE RESOURCES AVAILABLE AND NOTIFY PEPG

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Table 13-2. PEPG Error Responses (Page 2 of 3)

HTD INGEST	SPDI INITIALIZATION ERROR	INGEST	IF 1st OCCURANCE, ALLOW OPERATOR TO RECTIFY SITUATION, ELSE TERMINATE	ON 1st OCCURANCE, TRY TO RECTIFY PROBLEM, ELSE NO ACTION
	SPDI BUFFER OVERFLOW OR UNDERFLOW	INGEST	STOP HDT, NOTIFY OPERATOR, AND PROCESS SCENES ALREADY INGESTED	NONE
	HDT READ PROBLEMS	INGEST	STOP HDT, NOTIFY OPERATOR AND PROCESS SCENES ALREADY INGESTED	NONE
	BAD SPACECRAFT TIME CODES	INGEST	STOP HDT, NOTIFY OPERATOR AND PROCESS SCENES ALREADY INGESTED	NONE
	UNRECOVERABLE SYNC LOSS	INGEST	STOP HDT, NOTIFY OPERATOR AND PROCESS SCENES ALREADY INGESTED	NONE
	PEPG BUFFER OVERFLOW OR UNDERFLOW	INGEST	STOP HDT, NOTIFY OPERATOR AND PROCESS SCENES ALREADY INGESTED	NONE
CCT INGEST	EXPECTED CCT NOT ON LINE	INGEST	ALLOW OPERATOR TO MAKE THE CCT AND THEN PROCEED	MAKE THE CCT READY AND NOTIFY PEPG WHEN COMPLETE
	CCT READ PROBLEM	INGEST	NOTIFY OPERATOR AND TERMINATE	NONE
GEOMETRIC CORRECTION	CALCULATION ERROR	GEOCORR	NOTIFY OPERATOR AND TERMINATE	NONE
CCT GENERATION	CCT NOT READY	MSSPROD	ALLOW OPERATOR TO READY THE CCT AND THEN PROCEED	MAKE THE CCT READY AND NOTIFY PEPG WHEN COMPLETE
	NO WRITE RING	MSSPROD	ALLOW OPERATOR TO INSTALL A WRITE RING AND THEN PROCEED	READY THE CCT AND NOTIFY PEPG WHEN COMPLETE
	CCT WRITE PROBLEMS	MSSPROD	NOTIFY OPERATOR AND TERMINATE	NONE
	UNEXPECTED E.O.T. DETECTED	MSSPROD	ALLOW THE OPERATOR TO RECTIFY PROBLEM AND THEN CONTINUE. OTHERWISE TERMINATE	ATTEMPT TO RECTIFY PROBLEM AND NOTIFY PEPG

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Table 13-2. PEPC Error Responses (Page 3 of 3)

F241 GENERATION	LBR NOT READY	MSSPROD	ALLOW OPERATOR TO READY THE LBR AND PROCEED	MAKE THE LBR READY AND NOTIFY PEPC
	LBR CALIBRATION DATA CANNOT BE LOADED	MSSPROD	NOTIFY OPERATOR AND TERMINATE	NONE
	LBR WRITE PROBLEMS	MSSPROD	NOTIFY OPERATOR AND TERMINATE	NONE
	END OF FILM ROLE ENCOUNTERED	MSSPROD	INSTRUCT OPERATOR TO LOAD A NEW FILM ROLE AND PROCEED	LOAD A NEW FILM ROLE AND INFORM PEPC WHEN COMPLETE
DUMPS AND REPORTS GENERATION	REPORT FILE HAS OVERFLOWED	DUMREP	NOTIFY OPERATOR AND TERMINATE	NONE
CONTAL DISPLAY	CONTAL NOT READY	CONDIS	ALLOW OPERATOR TO READY THE CONTAL AND PROCEED	READY CONTAL AND REISSUE DISPLAY COMMAND
	PIXEL TRANSLATION TABLE NOT FOUND	CONDIS	NOTIFY OPERATOR AND WAIT	ENTER NEW TRANSLATION TABLE SELECTION
	CANNOT LOAD TRANSLATION TABLE	CONDIS	ALLOW OPERATOR TO RECTIFY PROBLEM	RECTIFY PROBLEM AND REISSUE COMMAND
	CONTAL WRITE PROBLEMS	CONDIS	NOTIFY OPERATOR AND WAIT	RECTIFY PROBLEM AND REISSUE COMMAND
	OPERATOR KEYIN ERRORS	CONDIS	ALLOW OPERATOR TO RE-ENTER THE COMMAND	RE-ENTER COMMAND

CCT-AM	(1600 BPI, BSQ)GES 10080, CCT-AM/PM Specification
Process Request	GES 10074, MMF/IGF Interface Control Document
MIPS Parameters	GES 10027, MIPS Specification
PEPG E&T Parameters	GES 10077, MIPS Specification
Tape and Film Labels	GES 10028, DRRTS Subsystem Specification
LBR Calibration Data	GES 10142, Ground Segment to Photo Shipping ICD
Outputs to Operator	LSD-IGF-PKG-3027, Package Design PEPG
CCT-AM (1600 BPI, BSQ)	GES 10080, CCT-AM/PM Specification
CCT-PM (1600 BPI, BSQ)	GES 10080, CCT-AM/PM Specification
Process Feedback	GES 10074, MMF/IGF ICD
F241-AM Latent Film	GES 10052, MSS 241-AM/PM Specification
F241-PM Latent Film	GES 10052, MSS F241-AM/PM Specification
Dumps (detailed scene)	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Reports	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D

Standard Header	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Format Check	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Ingest Summary	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Scene Summary	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Scene Comparison	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
PEPG Processing Summary	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
PEPG Quality Assurance	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Perform Evaluation	LSD-IGF-PKG-3027, Package Design PEPG, Appendix D
Image Display Data	LSD-IGF-CPD-3124, Comtal Display Process
Processing Status Report	LSD-IGF-PKG-3027, Package Design PEPG

13.9 PERSONNEL

MMF personnel provide process requests with identification of tapes and products required. The tape storage clerk provides HDT-AMs (CCTs if required) to the MIPS PEPG operator.

After products requested are generated, HDTs and CCTs are returned to tape storage by the tape storage clerk. Dumps and reports go to the Quality Assurance Group for assessment and latent film (F241 AM/PM) goes to MMF for transmittal to the Photo Lab for processing. MSS will distribute final products to the appropriate analysis personnel.

SECTION 14

PEPG COMPLETION

14.1 ENVIRONMENT/RESOURCES

The PEPG completion activity transfers product generation feedback information into the MMF-M DEC2050 computer system and updates the DEC2050 data base. Feedback information that is created programmatically by the product generation process is transferred from a MIPS or TIPS VAX 11/780 computer string to MMF-M via Decnet link. Feedback information that is created manually (i.e., hard copy data) is manually entered into the DEC2050 via a DEC VT78 KCRT terminal complex in Building 23. Photo Lab process requests for processing of 241mm film are printed on a DEC LA-180 terminal in Building 23.

The software modules that are employed by PEPG completion activity are part of the Ground Segment Management Subsystem (GMS), and consist of the following:

GXPREC (LSD-MMF-CPD-2080) - MIPS/TIPS Product Data Receive Process

GQHASS (LSD-MMF-CPD-2074) - GMS HDDR Product Assessment Entry Program

GPTAFB (LSD-MMF-CPD-2056) - Final Product Feedback for CCT Tapes

GPFGEN (LSD-MMF-PCD-2040) - GMS Photo Lab Process Request Generation

GPFIFB (LSD-MMF-CPD-2057) - GMS Final Product Film Feedback

GPFLFB (LSD-MMF-CPD-2051) - GMS Photo Lab Feedback

14.2 OVERVIEW/BACKGROUND

The objectives of the PEPG completion activity are: 1) to update the MMF-M data base with feedback information about the status of products generated for

performance evaluation, and 2) to record the assessed HDT and image quality information in the MMF-M data base.

The successful creation of a product that was requested for PEPG will result in the transfer of feedback information that closes out the initial PEPG process request. Products that are covered by this activity are the CCTs and 241 mm film rolls. PEPG process requests for HDT-AM dumps are not covered by this activity.

The PEPG completion activity is preceded by PEPG scheduling and product generation. Since PEPG completion closes out the process request, it is not followed by any procedural activity.

14.3 FUNCTION DESCRIPTION

The PEPG completion activity is implemented by application of the following processes (reference Figure 14.3-1):

a. Transfer CCT feedback files and quality files from MIPS VAX 11/780 to MMF-M DEC 2050 (unit GXPREC).

b. Apply CCT feedback data to MMF-M data base (unit GPTAFB).

c. Apply CCT quality data to MMF-M data base (unit GQHASS).

d. Transfer 241 mm latent film feedback files and quality files from TIPS VAX 11/780 to MMF-M DEC2050 (unit GXPREC).

e. Apply 241 mm latent film feedback data to MMF-M data base (unit GPFIFB).

f. Apply 241 mm latent film quality data to MMF-M data base (unit GQHASS).

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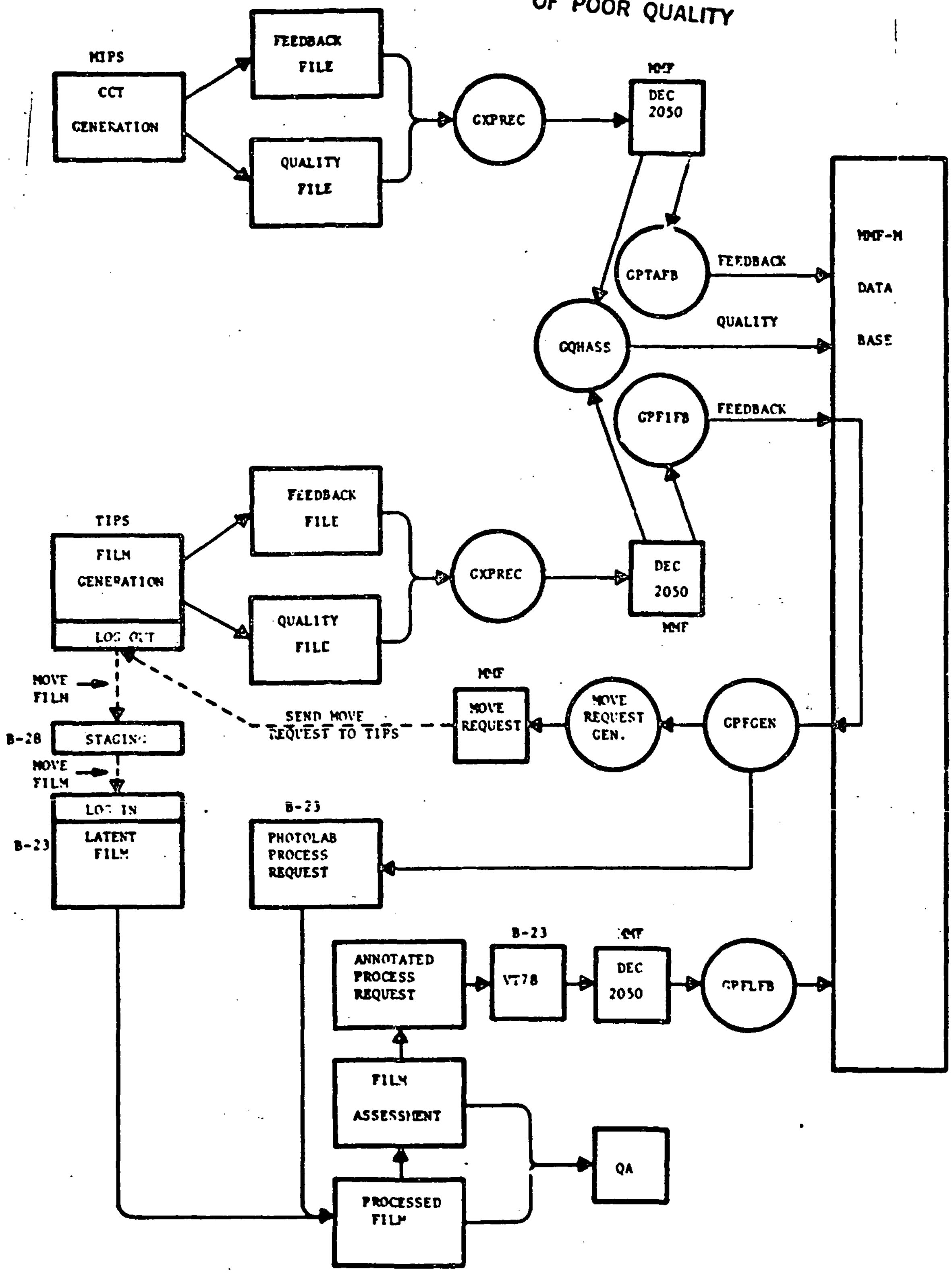

Figure 14.3-1. PEPG Completion Functional Diagram

g. Generate photo lab 241 mm film process request (unit GPFGEN).

h. Enter 241 mm processed film feedback data into MMF-M DEC2050 (production controller keyboard operation).

i. Apply 241 mm processed film feedback data to MMF-M data base (unit GPFLFB).

14.3.1 CCT PROCESSES (Figure 14.3-1)

Whenever a CCT is generated at MIPS in response to a PEPG process request, the feedback and quality files are created in the MIPS VAX 11/780. At MMF, programs GXPREC, GQHASS, and GPTAFB are run periodically. GXPREC samples the MIPS strings, and if any files are waiting to be sent, GXPREC transfers them across a Decnet link to the MMF DEC2050. GQHASS then applies the quality file data to the data base and GPTAFB applies the feedback file data to the data base, closing out the PEPG process request.

14.3.2 241 MM FILM PROCESSES (Figure 14.3-1)

Whenever a latent film roll is generated at TIPS in response to a PEPG process request, the feedback and quality files are created in the TIPS VAX 11/780. Program GXPREC periodically samples the TIPS strings, and transfers any waiting files to the MMF DEC2050 via a Decnet link. GQHASS then applies the quality file to the data base and GPFIFB applies the feedback file to the data base.

When the GPFIFB process is completed, program GPFGEN is triggered and causes a hard copy photo lab process request to be generated for the production

controller at the LA-180 printer terminal in Building 23. At the same time a move request for the latent film roll is generated at MMF (reference product tracking, section 22) and is transmitted to MIPS. The latent film is moved from MIPS, via Building 28 staging area, to Building 23 where the production controller delivers it, together with the process request, to the Photo Lab.

After film processing, the Photo Lab annotates the process request with the film feedback information, and prepares a separate film assessment sheet for QA evaluation. The annotated process request is delivered to the production controller, who enters the film feedback information into the MMF DEC2050 via a VT78 KCRT complex in Building 23. Program GPFLFB applies the film feedback data to the data base, closing out the original PEPG process request. The film roll and assessment sheet are delivered to QA.

14.3.3 OPERATING MODES

Under normal operating conditions the above described processing programs run in automatic mode every 30 minutes and do not require operator interaction, except for GPFLFB which is always run manually. Manual mode operation of all the programs is available to accommodate unanticipated needs, or to provide a work-around in situations that prevent successful automatic operation.

If the Decnet link is down, MIPS/TIPS will dump their files onto tape, and GXPREC will be run manually in the tape mode to copy the specified files from the tape into the MMF-M data base.

14.4 PROCESS OPERATIONS

The following paragraphs describe the programs used for the PEPG completion activity.

14.4.1 GXPREC (LSD-MMF-CPD-2080) - MIPS/TIPS PRODUCT DATA RECEIVE PROCESS

14.4.1.1 Summary

The MIPS/TIPS product data receive (GXPREC) program is a part of the archive scheduling and MIPS/TIPS feedback. It can be run automatically or manually by an operator whenever the Decnet link is working. It will copy all files mentioned in the VAX-transfer file over from each MIPS/TIPS and place them in the appropriate directory on the DEC 2050. If the Decnet link is down, this module will be run manually in the tape mode by the operator. It will copy files specified in a tape and place them in the appropriate directory.

14.4.1.2 Inputs

14.4.1.2.1 Operator-Supplied

Operator inputs are supplied only when GXPREC is run in manual mode, and are in the form of responses to program prompts. Table 14.4-1 details GXPREC prompts and acceptable responses.

Table 14.4-1. GXPREC Prompts/Responses

PROMPT	RESP.	EXPLANATION
DO YOU WISH TO ENTER FILE NAME:__________ INTO CURINX.PRC?	Y	THE DECNET IS DOWN, AND THE OPERATOR WANTS TO ENTER THE FILE MENTIONED INTO THE DIRECTORY DATA BASE.

OPLAN

	N	THE OPERATOR DOESN'T WANT TO ENTER THE FILE INTO THE DIRECTORY WHEN THE DECNET IS DOWN.
DO YOU WISH TO TRANSFER FILES FROM THIS STRING (Y/N)?	Y	TRANSFER FILES OF A SPECIFIC STRING TO DEC 2050 VIA DECNET
	N	DON'T TRANSFER FILES FROM THAT STRING TO DEC 2050.
DO YOU WISH TO PROCEED WITH THE GXPREC PROGRAM (Y/N)?	Y	CONTINUE COPYING FILES
	N	HALT COPYING FILES
DO YOU WISH TO HAVE THIS FILE TRANSFERRED (Y/N)?	Y	TRANSFER FILES TO DEC 2050 VIA DECNET
	N	DON'T TRANSFER FILES TO DEC 2050.

14.4.1.2.2 Other Inputs

Files

When the Decnet link is up, GXPREC transfers the VAX-transfer file directory (TRNFIL) and the files listed within into the MMF system and updates the CURINX.PRC directory. If the Decnet link is down, all files along with their VAX-transfer file directory (TRNFIL that are in the MIPS/TIPS's VAX) are dumped onto a tape which is later read into the MMF system.

Data Base Files

GXPREC requires the following data base files as inputs regardless of the operational mode:

a. Common parameter

b. Directory.

14.4.1.3 Outputs

The MIPS/TIPS product data receive program produces four types of outputs:

a. Operator display (only when GXPREC is run in manual mode)

b. Updated data base files

c. Summary report file (GXPREC.SUM)

d. 'TAKE' file in *TAPE* mode only (GXPREN.CMD).

14.4.1.3.1 Operator Displays

A list of the prompts displayed to the operator and their allowable responses are detailed in Table 14.4-1.

An incorrect response is indicated to the operator by the following:

ERROR: Invalid response, valid entries are Y and N only

Other informational displays, such as processing and error messages are shown in Table 14.4-2.

14.4.1.3.2 Files

As part of its processing functions, the only data base file updated by GXPREC is the directory. GXPREC also creates a scratch file (GXPREC.SCR) as part of the data receive processing. GXPREC generates the following:

a. Processing report files:

GXPREC will create a summary processing report file (GXPREC.SUM), a user interaction log file (GXPREC.UIL), a 'TAKE' file (GXPREN.CMD) and a production log (GXPREC.PLG). The summary report file summarizes the processing completed by GXPREC, while the user interaction log file

Table 14.4-2. Message/Action Matrix

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CATEGORY	MESSAGE	DO NOT RE-RUN GXPREC	PRINT GXPREC.*	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DBMS, UNSUCCESSFUL ________ OPERATION	X					X	
	FATAL ERROR: DBMS, SEE SYSCOM ERROR STATUS	X					X	
	FATAL ERROR: UNABLE TO ______ THE ______ FILE		X	X				X
	FATAL ERROR: ______ IS A BAD DATA BASE GXPREC OPERATING MODE	X	X				X	
	FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND	X	X				X	
	FATAL ERROR: THE GXPREC OCCURRENCE OF CCP-COMMON PARAM NOT FOUND	X	X				X	
	FATAL ERROR: INVALID RECORD TYPE OF FIRST TRNFIL.DAT RECORD <FILE-REC-TYPE>	X	X	X				X
	FATAL ERROR: ______ IS A BAD DATA BASE SENSOR TYPE	X	X				X	
	FATAL ERROR: MANUAL MODE EXPECTED FOR 'TAPE' PROCESSING MODE	X	X				X	
	FATAL ERROR: ____________	X	X				X	
ERROR	ERROR: INVALID RESPONSE, VALID ENTRIES ARE Y AND N ONLY					X		
	ERROR: FILE HANDLING PROBLEM IN CALLING DUASFT UTILITY, FILE NOT TRANSFERRED		X					X
	ERROR: FAILED TO TRANSFER TRNFIL FILE ON THE VAX TO DEC-20		X					X
	ERROR: ____________		X		X			

Table 14.4-2. Message/Action Matrix (cont'd)

CATEGORY	MESSAGE	DO NOT RE-RUN CXPREC	PRINT CXPREC.*	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
WARNING	WARNING: A FILE IS ALREADY ENTERED IN CURINX.PRC INDEX				X			
	WARNING: A FILE IS ALREADY ENTERED IN DELINX.PRC INDEX				X			
	WARNING: <FILE-NAME> IS NOT AMONG LIST OF VALID FILES. FILE NOT TRANSFERRED				X			
INFORMATION	INFO: CXPREC ABORTED DUE TO CTRL/C				X			
	INFO: THE NODE DIRECTORY OF THE FACILITY IS:________				X			
	INFO: THE NODE NAME OF THE FACILITY IS:________				X			
	INFO: THE OPERATOR DID NOT WISH TO TRANSFER FILES FROM THIS STRING				X			
	INFO: THE OPERATOR DID NOT WISH TO TRANSFER THE FILE				X			
	INFO: THE FILE TO BE TRANSFERRED IS________				X			
	INFO: THE OPERATOR REQUESTED TERMINATION OF THE PROGRAM				X			
	INFO: NO FILES HAVE BEEN ENTERED INTO THE DIRECTORY DATA BASE				X			
	INFO: THE ________ FILE NAME HAS BEEN SUCCESSFULLY ENTERED TO CURINX				X			
	INFO: THE ________ FILE HAS BEEN SUCCESSFULLY TRANSFERRED ACROSS DECNET				X			

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Table 14.4-2. Mes e/Action Matrix (cont'd)

CATEGORY	MESSAGE / ACTION	DO NOT RE-RUN GXPREC	PRINT GXPREC.*	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
INFORMATION (CONT)	INFO: NO FILES HAS BEEN TRANSFERRED FROM THIS STRING				X			
	INFO: GXPREC RAN IN THE __________ MODE				X			
	INFO: __________				X			
OTHER	DO YOU WISH TO HAVE THIS FILE TRANSFERRED (Y/N)?					X		
	DO YOU WISH TO PROCEED WITH THE GXPREC PROGRAM (Y/N)?					X		
	DO YOU WISH TO ENTER THIS FILE NAME: __________ TO CURINX PRC					X		
	GXPREC: END OF PROCESSING					X		

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details the operator prompts and responses. The 'TAKE' file contains all the files entered by GXPREC into the PRC directory of the data base and which, therefore, must be renamed to have the same extension. The report files are printed via the job control language.

14.4.1.4 Operational Sequence

GXPREC can be implemented by keying either of the following statements:

a. @TAKE GXPREC.CMD (for interactive processing)

b. @SUBMIT GXPREC.CTL (for batch processing).

The operator should watch out for the TAPE MODE and add:

@TAKE GXPREN.CMD

@DELETE *.BPR

14.4.1.5 Program Scheduling

This program is normally initiated as part of the PEPG CCT/film completion notification transaction, which is activated by interval timer every 30 minutes.

When initiated manually as a separate program, it will be run by a production controller at a VT78 KCRT complex.

Program run time (wall clock) is estimated to be TBD minutes.

14.4.2 GQHASS (LSD-MMF-CPD-2074) - GMS HDDR PRODUCT ASSESSMENT ENTRY PROGRAM

14.4.2.1 Summary

The purpose of the HDDR product assessment entry program (GQHASS) is to record

quality information about HDTs and images in the product assessment area of the MMF data base. The program, which is designed to run in automatic mode, may be initiated by either the operator or by the HDDR assessment entry program. The quality information to be processed consists of two kinds of data: image quality and HDT quality. For the PEPG application, image and HDT quality data files are created at the generation of a CCT or a 241 mm film from an HDT.

Image quality refers to the quality of the contents of the tape. Whenever a PEPG CCT or film is created from an HDT, the quality of the images on the HDT is determined and entered into an image quality data file (IQDXXX).

GQHASS will process the file and enter the image quality information into records within the product assessment area of the MMF data base.

HDT quality refers to the quality of the physical HDT itself. Whenever an HDT is read or written (which may occur many times for a given HDT), the quality of the physical HDT is determined and entered into an HDT quality data file (PAYXXX).

GQHASS will process the file and enter the HDT quality information into records within the product assessment area of the MMF data base.

During the course of processing, all IQDXXX and PAYXXX file names which are successfully processed are transferred from the CURINX directory to the DELINX directory, and a summary report is generated which lists all significant actions which occurred during the execution of the program.

14.4.2.2 Inputs

The GMS HDDR product assessment entry program (GQHASS) records HDT and image quality information in the MMF data base. This process can only be run under the automatic mode and does not require any operator inputs.

14.4.2.2.1 Operator Supplied Inputs

None.

14.4.2.2.2 Files

a. Image Quality Data Files (IQDXXX.YY)

b. HDT Quality Data files (PAYXXX.YYY).

14.4.2.2.3 Data Base Files

GQHASS requires the following data base files as inputs:

a. Common parameter

b. Directory

c. Archive product

d. Product assessment.

14.4.2.3 Outputs

The GMS HDDR product assessment entry program (GQHASS) produces several types of outputs.

a. Operator display

b. Summary report file

c. Updated data base files

d. User interaction log.

14.4.2.3.1 Operator Display

The end of processing message is the only message that will be displayed to the operator.

14.4.2.3.2 Files

As part of the processing functions, the following data bases are updated:

a. Directory
b. Product assessment.

GQHASS creates a scratch file during its processing and a summary processing report file (GQHASS) containing information about IQDXXX and PAYXXX files that are already processed. A summary report file is printed via the job control language. A user interaction log is also printed, which may contain any of the error or information messages listed in Table 14.4-3.

14.4.2.4 Operational Sequence

GQHASS can be implemented by keying either of the following statements:

a. TAKE GQHASS.CMD (for interactive processing)
b. @SUBMIT GQHASS.CTL (for batch processing).

14.4.2.5 Program Scheduling

This program is normally initiated as part of the PEPG CCT/film completion notification transaction, which is activated by interval timer every 30 minutes.

When initiated manually as a separate program, it will be run by a production controller at a VT78 KCRT complex.

Table 14.4-3. Message/Action Matrix

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CATEGORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL ERROR:	FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND					X
	FATAL ERROR: THE SCHED OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND					X
	FATAL ERROR: THE PRODUCT-ASSESSMENT IS EMPTY					X
	FATAL ERROR: THE DIRECTORY NOT FOUND IN THE DATA BASE					X
	FATAL ERROR: BTI RECORD NOT FOUND FOR BPA-IRIG-TIME:____					X
	FATAL ERROR: BTI RECORD NOT FOUND FOR BIQ-IRIG-TIME:____					X
	FATAL ERROR: THE SET AAP-AAI IS EMPTY					X
	FATAL ERROR: THE SET AAI-AAS IS EMPTY, AAP-PROD-ID:					X
	FATAL ERROR: SCENE NOT FOUND, IRIG TIME:____					X
	FATAL ERROR: BANDS PRESENT NOT FOUND FOR SCENE:					X
	FATAL ERROR: BPA RECORD NOT FOUND USING DATA BASE KEY					X
	FATAL ERROR: SCRATCH RECORD INFO MISMATCH BPA INFO					X
	FATAL ERROR: BIQ RECORD NOT FOUND USING DATA BASE KEY					X
	FATAL ERROR: SCRATCH RECORD INFO MISMATCH BIQ INFO					X
	FATAL ERROR: SCENE VIDEO TIME NOT MATCH SCRATCH IRIG TIME:					X
	FATAL ERROR:____				X	X
ERROR:	ERROR: THE FILE IS EMPTY			X	X	
	ERROR: INVALID STANDARD HEADER RECORD TYPE:____			X	X	
	ERROR: INVALID HEADER RECORD NOT FOUND			X	X	

Table 14.4-3. Messag' 'ction Matrix (cont'd)

CATEGORY	MESSAGE	NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
ERROR (CONT'D)	ERROR: INVALID HEADER RECORD TYPE:_____			X	X	
	ERROR: THE SENSOR OF THE TAPE ID DOES NOT MATCH WITH THE DB SENSOR			X	X	
	ERROR: INVALID TAPE ID, ONLY HDT IS VALID HERE			X	X	
	ERROR: INVALID HDT-ID-_____			X	X	
	ERROR: INVALID PROCESSING TIME - _____			X	X	
	ERROR: INVALID INPUT DATA SOURCE:_____FOR CURRENT WORK STATION			X	X	
	ERROR: INVALID INPUT TAPE ID FOR WORK STATION: "PDT":_____			X	X	
	ERROR: THE INPUT 'TAPE' IS SUPPOSED TO BE BLANK IN WORK STATION "HDT"			X	X	
	ERROR: INVALID HDDR DRIVE NUMBER:_____			X	X	
	ERROR: INVALID DATA RATE:_____			X	X	
	ERROR: INVALID STRING ID_____FOR WORK STATION_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK RATE BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK RATE BIAS QUALITY:_____			X	X	
	ERROR: INVALID GEOMETRIC YAW BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC YAW BIAS QUALITY:_____			X	X	
	ERROR: INVALID GEOMETRIC YAW RATE BIAS VALUE: _____			X	X	
	ERROR: INVALID GEOMETRIC YAW RATE BIAS QUALITY:_____			X	X	
	ERROR: INVALID GEOMETRIC RADIAL BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC RADIAL BIAS QUALITY:_____			X	X	

Table 14.4-3. Message/Action Matrix (cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
ERROR (CONT'D)	ERROR: INVALID GEOMETRIC RADIAL RATE BIAS VALUE:			X	X	
	ERROR: INVALID GEOMETRIC RADIAL RATE BIAS QUALITY:____			X	X	
	ERROR: INVALID MEAN X OFFSET OF CONTROL POINTS USED:_____			X	X	
	ERROR: INVALID MEAN X OFFSET OF CONTROL POINTS USED:_____			X	X	
	ERROR: INVALID TOTAL NUMBER OF EPHEMERIS POINTS:_____			X	X	
	ERROR: INVALID NUMBER OF REJECTED EPHEMERIC POINTS:_____			X	X	
	ERROR: INVALID ACCURACY EPHEMERIS FIT, X:_____			X	X	
	ERROR: INVALID ACCURACY EPHEMERIS FIT, Y:_____			X	X	
	ERROR: INVALID CAL WEDGE STANDARD DEVIATION (NO.):_____			X	X	
	ERROR: MEAN CAL WEDGE, INVALID DETECTOR X GAIN (NO:_):			X	X	
	ERROR: MEAN CAL WEDGE, INVALID DETECTOR X OFFSET (NO:_):			X	X	
	ERROR: INVALID MEAN CAL WEDGE OF PIXEL (NO:_):_____			X	X	
	ERROR: INVALID STANDARD DEVIATION CAL WEDGE OF PIXEL (NO:_):			X	X	
	ERROR: INVALID MEAN HISTOGRAM OF PIXEL (NO:_):___			X	X	
	ERROR: INVALID STANDARD DEVIATION HISTOGRAM OF PIXEL (NO:___)			X	X	
	ERROR: INVALID MEAN X OFFSET OF CORRELATED CONTROL POINTS:			X	X	
	ERROR: INVALID MEAN Y OFFSET OF CORRELATED CONTROL POINTS:			X	X	
	ERROR: INVALID GEOMETRIC ALONG TRACK BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ALONG TRACK BIAS QUA[illegible] Y:____			X	X	

Table 14.4-3. Message/Action Matrix (cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
ERROR (CONT'D)	ERROR: INVALID GEOMETRIC ALONG TRACK RATE BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK BIAS VALUE:_____			X	X	
	ERROR: INVALID GEOMETRIC ACROSS TRACK BIAS QUALITY:_____			X	X	
	ERROR: INVALID SAMPLE TYPE:_____			X	X	
	ERROR: SCENE SAMPLE TYPE IS NOT FOR SUBSYSTEM OF ORIGIN "DRRTS"			X	X	
	ERROR: INVALID PROCESSING MODE_____, IN OR OT (OUT) EXPECTED			X	X	
	ERROR: SCENE RECORDS NOT FOUND			X	X	
	ERROR: SCENE-ID NOT EXPECTED FROM FILE FROM DRRTS			X	X	
	ERROR: INVALID PROCESS USING HDT:_____FOR SUBSYSTEM DRRTS			X	X	
	ERROR: INVALID SCENE RECORD TYPE:_____			X	X	
	ERROR: INVALID SCENE ID_____			X	X	
	ERROR: INVALID IRIG TIME_____			X	X	
	ERROR: INVALID NUMBER OF CORRECTED ERROR COUNT:_____			X	X	
	ERROR: INVALID INTERVAL SEQUENCE NUMBER:_____			X	X	
	ERROR: INVALID SPACECRAFT TIME OF FAULT:_____			X	X	
	ERROR: INVALID MAJOR FRAME SYNCHRONOUS LOSS:_____			X	X	
	ERROR: INVALID MINOR FRAME SYNCHRONOUS FAULT:_____			X	X	
	ERROR: INVALID MINOR FRAME SYNCHRONOUS LOSS:_____			X	X	
	ERROR: INVALID CAL WEDGE MEAN VALUE (NO.:_____):_____			X	X	

Table 14.4-3. Message/Action ...

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
ERROR (CONT'D)	ERROR: INVALID ACCURACY EPHEMERIS FIT, Z:_____			X	X	
	ERROR: INVALID TOTAL NUMBER OF ATTITUDE POINTS:_____			X	X	
	ERROR: INVALID NUMBER OF REJECTED ATTITUDE POINTS:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT X:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT Y:_____			X	X	
	ERROR: INVALID ACCURACY OF ATTITUDE FIT Z:_____			X	X	
	ERROR: INVALID LINE LENGTH MEAN:_____			X	X	
	ERROR: INVALID LINE LENGTH STANDARD DEVIATION:_____			X	X	
	ERROR: 5 SECOND PULSE SAMPLE SAMPLE TYPE DO NOT COME FROM MIPS/TIPS			X	X	
	ERROR: INVALID NUMBER OF SCENES:_____			X	X	
	ERROR: INVALID PROCESS USING HDT:_____ FROM SUBSYSTEM "MIPS/TIPS"			X	X	
WARNING:	WARNING: FAIL TO ADD FILE TO DELINX-	X				
	WARNING: FAIL TO DELETE FILE FROM CURINX	X				
	WARNING: VIDEO INFORMATION IS NOT YET AVAILABLE FOR THIS HDT	X				
INFORMATION	INFO: DUMMY BSC-ASSESSED-SCENE RECORD CREATED	X				
	INFO: NO BPA-ASSESSED-DATA IN DUMMY BSC-ASSESSED-SCENE	X				
	INFO: NO BIQ-IMAGE-QUALITY IN DUMMY BSC-ASSESSED-SCENE	X				
	INFO: NUMBER OF FILES REJECTED:_____	X				
	INFO: NUMBER OF FILES PROCESSED:_____	X				

Table 14.4-3. Mes /Action Matrix (cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	NONE	RESPOND PROPERLY	DO NOT RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINIS-
INFORMATION (CONT'D)	INFO: TOTAL NUMBER OF FILES PROCESSED:_____	X				
	INFO: INTERVAL FOR THIS IMAGE PULSE HAS NOT BEEN INVERTED	X				
OTHERS	GQHASS - END OF PROCESSING	X				

Program run time (wall clock) is estimated to be 12 minutes.

14.4.3 GPTAFB (LSD-MMF-CPD-2056) - FINAL PRODUCT FEEDBACK FOR CCT TAPES

14.4.3.1 Summary

The PEPG CCT feedback procedure updates the data base with feedback information about the creation of computer compatible tapes (CCTs). This feedback information corresponds to PEPG process requests that were created by the Mission Management Facility (MMF) and sent via Decnet to MIPS. When fulfilling the process requests, MIPS creates the CCT feedback files and sends them to MMF via Decnet. GPTAFB is usually initiated by the product completion transaction; however, GPTAFB can also be initiated by the operator.

After all CCT feedback files have been processed, a cancellation log, a regeneration log and a processing summary are printed.

14.4.3.2 Inputs

14.4.3.2.1 Operator-Supplied

Operator inputs are supplied only when GPTAFB is run in manual mode, and are in the form of responses to program prompts. The following table details prompts and acceptable operator responses.

PROMPT	RESPONSE	EXPLANATION
DO YOU WISH TO PROCESS THIS FILE (Y/N)?	Y	PROCESS THIS FILE

	N	DO NOT PROCESS THIS FILE
ERROR: INVALID RESPONSE SHOULD ENTER Y OR N	Y	PROCESS THIS FILE
	N	DO NOT PROCESS THIS FILE
DO YOU WISH TO CONTINUE WITH THE PROCESS (GPTAFB) (Y/N)?	Y	CONTINUE WITH THE PROCESS (GPTAFB)
	N	DO NOT CONTINUE WITH THE PROCESS (GPTAFB)

14.4.3.2.2 Data Base Input

GPTAFB requires the following data base files as input, regardless of the operational mode.

a. Common parameter

b. Error-text

c. Archive/product

d. Production

e. Route

f. User support

g. Directory

h. Main image.

14.4.3.3 Outputs

The final product feedback (GPTAFB) generates three types of output: operator displays (only when GPTAFB is running in manual mode), updates and/or newly created records, and printed outputs.

14.4.3.3.1 Operator Displays

There are prompts displayed to the operator, and have the following format:

DO YOU WISH TO PROCESS THIS FILE (Y/N)?

ERROR: INVALID RESPONSE. SHOULD ENTER Y OR N

DO YOU WISH TO CONTINUE WITH THE PROCESS (GPTAFB) (Y/N)?

Allowable responses are as detailed in paragraph 14.4.3.2.1.

14.4.3.3.2 Data Base Areas

As part of its processing, GPTAFB updates the following data base areas:

a. Common parameter

b. Archive/product

c. Production

d. Main image

e. Directory.

14.4.3.3.3 Printed Outputs

GPTAFB will create a summary processing report, regeneration log, and a cancellation log given a normal termination. Regeneration log prints out all the scenes which should be regenerated, and cancellation log prints out all the cancelled scenes. The summary report prints out the summary of process completed by GPTAFB, and may contain any of the messages listed in Table 14.4-4.

14.4.3.4 Operational Sequence

GPTAFB can be implemented by keying either of the following statements:

a. @TAKE GPTAFB.CMD (for interactive processing)

b. @SUBMIT GPTAFB.CTL (for batch processing).

Table 14.4-4. Mess /Action Matrix

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	DO NOT RERUN GPTAFB	DO NOT RERUN THAT PACKET (MANUAL MODE)	PRINT GPTAFB.*	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TC SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DBMS ______ ERROR	X					X	
	FATAL ERROR: ______ RECORD NOT FOUND	X	X				X	
	FATAL ERROR: ______	X					X	
	FATAL ERROR: INPUT/OUTPUT FILE ERROR IN:	X		X				X
ERROR	ERROR: INVALID RESPONSE - SHOULD ENTER Y OR N				X			
	ERROR: INVALID ______ . INVALID VALUE IS ______		X	X				X
	ERROR: THERE IS NO SCENE RECORD ON ______ .		X	X				X
	ERROR: ______ FILE IS EMPTY		X	X				
	ERROR: ______ OF PPR AND TFB DO NOT MATCH		X	X				
WARNING	WARNING: TOO MUCH INFORMATION HAS BEEN GATHERED			X				
	WARNING: FEEDBACK INFORMATION IS MISSING			X				
	WARNING: REDUNDANT FEEDBACK RECORD			X				
	WARNING: PPR FILE NOT FOUND. TFB PROCESS REQUEST REJECTED			X				

Table 14.4-4. Message/Action Matrix (cont'd)

ORIGINAL PAGE IS OF POOR QUALITY

CATEGORY	MESSAGE	DO NOT RERUN GPTAFB	DO NOT RERUN THAT PACKET (MANUAL MODE)	PRINT GPTAFB.*	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
INFORMATION	INFO: NO FEEDBACK FILES AVAILABLE FOR PROCESSING					X		
	INFO: PPR AND TFB FILES ARE DELETED FROM CURINX, ENTERED INTO DELINX					X		
	INFO: VERIFICATION SUCCESSFUL. APPLICATION PROCESS BEGINS					X		
	INFO: A SCENE HAS BEEN CANCELLED. SEE CANCELLATION LOG.					X		
OTHER	GPTAFB PROCESSING WAS STOPPED BY OPERATOR'S REQUEST					X		
	DO YOU WISH TO PROCESS THIS FILE? (Y/N)				X			
	DO YOU WISH TO CONTINUE PROCESSING? (Y/N)				X			

14.4.3.5 Program Scheduling

This program is normally initiated as part of the PEPG CCT/film completion notification transaction, which is activated by interval timer every 30 minutes.

When initiated manually as a separate program, it will be run by a production controller at a VT78 KCRT complex.

Program run time (wall clock) is estimated to be less than 5 minutes.

14.4.4 GPFGEN (LSD-MMF-CPD-2040) - GMS PHOTO LAB PROCESS REQUEST GENERATOR

14.4.4.1 Summary

The photo lab process request generation (GPFGEN) can be run automatically as part of the photographic laboratory work order completion transaction, or it can be operated in a manual mode under the control of an operator. This module generates work orders for photo lab processing. If a process request is generated, the data base records are updated to indicate that the imagery has been sent to the photo lab, and a process request file(s) is produced.

GPFGEN creates a photo lab process request file (FPR) for each film roll scheduled for photo lab processing. An entry is made in the directory area of the data base for each process request created. Finally, film process request listings, work order lists, required master listings and a processing summary are generated.

14.4.4.2 Inputs

14.4.4.2.1 Operator-Supplied

Operator inputs are supplied only when GPFGEN is run in manual mode, and are in the form of responses to program prompts. The following table details GPFGEN prompts and acceptable operator responses:

PROMPT	RESPONSE	EXPLANATION
Do you wish to proceed with the GPFGEN process (Y/N)?	Y	To continue photo lab process request generation
	N	To stop photo lab process request generation
Do you wish to process this film ID (Y/N)?	Y	To generate a photo lab process request for film roll
	N	Do not generate a photo lab process request for film roll
WARNING: Current facility is not B23. Do you wish to proceed (Y/N)?	Y	To generate a photo lab process request despite the fact that the film roll does not have Building 23 as its current facility
	N	Do not generate a photo lab process request for the film roll

14.4.4.2.2 Other

GPFGEN requires the following data base files as inputs regardless of the operational mode:

a. Archive-product

b. Route

c. Production

d. User-support

e. Directory

f. Common-parameter.

14.4.4.3 Outputs

The photo lab process request generator produces three types of outputs: operator displays (only when GPFGEN is run in the manual mode), updated and/or newly created files, and printed outputs.

14.4.4.3.1 Operator Displays

The set of operator prompts and appropriate responses may be found in paragraph 14.4.4.2.1. An incorrect response is indicated to the operator by the display:

ERROR: INVALID REPONSE. VALID REPONSES ARE Y OR N.

Other informational displays, such as processing and error messages are detailed in Table 14.4-5.

14.4.4.3.2 Files

GPFGEN creates and/or updates several files as part of its processing function. With normal processing, GPFGEN updates the following data base files:

a. Common-parameter

b. Archive-product

c. Production

d. Directory.

14.4.4.3.3 Printed Outputs

a. Film process request listing containing:

1. NASA scene ID

2. Internal scene ID

3. Scene type

Table 14.4-5. Message/Action Matrix

CATEGORY	MESSAGE	DO NOT RERUN GPFGEN	DO NOT RERUN FILM ROLL (MANUAL MODE)	TAKE GPFGEN_ERR.CMD*	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO DATA BASE ADMIN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DBMS ___	X					X	
	FATAL ERROR: ___ FILE ERROR: ___	X		X				X
	FATAL ERROR: ___ NOT FOUND.	X		X			X	
	FATAL ERROR: UNABLE TO REESTABLISH APS-APK CURRENCY	X					X	
	FATAL ERROR: ___	X		X				X
ERROR	ERROR: INVALID RESPONSE. VALID RESPONSES ARE Y OR N				X			
INFORMATION	INFO: ___					X		
	INFORMATION: ___					X		
OTHER	WARNING: ___				X			
	GPFGEN-END OF PROCESSING					X		
	DO YOU WISH TO PROCEED WITH THE GPFGEN PROCESS (Y/N)?				X			
	DO YOU WISH TO PROCESS THIS FILM_ID (Y/N)?				X			
	THE FILM-ID IS: ___					X		
	THE NUMBER OF SCENES IS: ___					X		
	THE PROCESS REQUEST FILE IS: ___					X		

4. Band

5. Frame number

6. Quality assessment

7. Error code.

The format of the listing is shown in Figure 14.4-1.

b. Processing summary file that contains:

1. The film ID of each film scanned

2. The ID of the process request file per film

3. The number of scenes per item

4. The current facility of each film, and three reports that are sent to the photo lab (reference GES 10142, Ground Segment to Photo Shipping Support Facility ICD).

c. List of required master rolls containing:

1. Film IDs

2. Comments

d. List of work orders generated containing:

1. Request ID

2. Archive master roll ID

3. Priority

4. Comments

e. User interaction log file.

14.4.4.4 Operational Sequence

GPFGEN can be run by keying either of the following statements:

LISTING : CP0400
SUBSYSTEM : CMS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 29-MAY-81
TIME : 10:50

FILM PROCESS REQUEST LISTING FOR FILE: FPR002

ROLL ID : L4R0R8109902
OUTPUT : ROLL PRODUCTS
DISPOSITION : B23 STAGING
PPL PROCESSING DESCRIPTION :

FROM A 241 MM LATENT FILM
PRODUCE A 241 MM NEGATIVE/POSITIVE

PROCESS REQUEST NUMBER : PPL8114A0001
PRIORITY : 99
COPIES REQUESTED : 01
ACCEPT/REJECT ROLL ? : ______________

REJECT ERROR-CODE : ______________
COPIES PRODUCED : ______________
DATE/TIME PPL INITIATED : ______________
DATE/TIME PPL COMPLETED : ______________

NASA SCENE ID	INTERNAL SCENE ID	SCENE TYPE	BAND	FRAME #	QUALITY ASSESSMENT	ERROR CODE
8216416471	4R0340262166	P	1	0001		
8216416473	4R0340272164	P	1	0002		
8216416482	4R0340297164	P	1	0003		
8216416491	4R0340312164	P	1	0004		
8216416494	4R0340322164	P	1	0005		
8216416500	4R0340332164	P	1	0006		
8216416503	4R0340342164	P	1	0007		
8216416505	4R0340352164	P	1	0008		

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Figure 14.4-1. Film Process Request Listing

a. @TAKE GPFGEN.CMD (for interactive processing)

b. @SUBMIT GPFGEN.CTL (for batch processing).

14.4.4.5 Program Scheduling

This program is normally initiated as part of the PEPG CCT/film completion notification transaction, which is activated by interval timer every 30 minutes.

When initiated manually as a separate program, it will be run by a production controller at a VT78 KCRT complex.

Program run time (wall clock) is estimated to be less than 5 minutes.

14.4.5 GPFIFB (LSD-MMF-CPD-2057) - GMS FINAL PRODUCT FILM FEEDBACK

14.4.5.1 Summary

The GMS final product film feedback module, GPFIFB, runs automatically as part of the 241 mm film roll completion transaction; it can also be run manually by the operator. The program will verify feedback files and then apply them to the data base, adding new film roll records to the data base, and updating the product request records to show that HDT to film processing has been completed. More than one process request may be handled in producing a single roll of film. All the process requests which produced a particular roll of film are tabulated in the packet directory file.

The final product film feedback is initiated by the product completion notifier transaction. Optionally, the operator can initiate the process to selectively process packets.

14.4.5.2 Inputs

14.4.5.2.1 Operator-Supplied

Operator inputs are supplied only when GPFIFB is run in manual mode and are in response to program prompts. The following table details GPFIFB prompts and acceptable operator responses:

PROMPT	RESPONSE	EXPLANATION
DO YOU WISH TO CONTINUE PROCESSING? (Y/N)	Y N	Continue feedback proc. Stop processing
FILM ROLL ID: L4TLR8XXXXXX NUMBER OF PROCESS REQUESTS: 99 NUMBER OF SCENES ON ROLL: 999	Y	Process film roll and apply to data base if no errors
DO YOU WISH TO PROCESS THIS FILM ROLL? (Y/N)	N	Do not process these feedback files for this film roll

14.4.5.2.2 Files

GPFIFB requires the following files as input, regardless of the operational mode:

a. Final product process request file (PPRXXX.PTB)

b. Packet directory feedback file (FPDXXX.PRC)

c. Final product film feedback file (FFBXXX.PRC).

14.4.5.2.3 Data Base

GPFIFB requires the following data base files as input, regardless of the operational mode:

a. Archive-product

b. Production

c. Common parameter

d. Route

e. Main image

f. Directory

g. Error text.

14.4.5.3 Outputs

The final product film feedback processor produces the following outputs:

a. Operator displays - only when GPFIFB is run in manual mode

b. Updated data base files

c. Processing scratch files

d. Processing report files.

14.4.5.3.1 Operator Displays

A list of all messages displayed to the operator is shown in Table 14.4-6.

The original prompt will then be redisplayed for the operator.

14.4.5.3.2 Updated Data Base Files

GPFIFB updates the following data base files:

a. Archive-product

b. Production

c. Main image

d. Directory.

Table 14.4-6. Message/Action Matrix

CATEGORY	MESSAGE	DO NOT RE-RUN GPFIFB	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE						X	X
	FATAL ERROR: DBMS, UNSUCCESSFUL ____ OPERATION	X						X
	FATAL ERROR: UNABLE TO FIND COMMON PARAM FLAG RECORD	X						X
	FATAL ERROR: UNABLE TO FIND COMMON PARAM SCHED RECORD	X						X
	FATAL ERROR: UNABLE TO FIND COMMON PARAM BPFIFB RECORD	X						X
	FATAL ERROR: UNABLE TO FIND DIRECTORY INDEX RECORD	X						X
	FATAL ERROR: DIRECTORY INDEX BEING PROCESSED CONTAINS NO FILE NAME	X						X
	FATAL ERROR: UNABLE TO FIND ERROR-TEXT RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ARCHIVE PRODUCT RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ARCHIVE PRODUCT INTERVAL RECORD	X						X
	FATAL ERROR: UNABLE TO MATCH ARCHIVE PRODUCT SCENE RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ARCHIVE PRODUCT WORK STN RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ARCHIVE PRODUCT STATUS RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ARCHIVE PRODUCT KEY RECORD	X						X
	FATAL ERROR: UNABLE TO FIND PRODUCTION SCENE POINTER RECORD	X						X
	FATAL ERROR: UNABLE TO MATCH PRODUCTION PRODUCT REQUEST RECORD	X						X
	FATAL ERROR: UNABLE TO FIND PRODUCTION REQUEST ORDER LINK RECORD	X						X
	FATAL ERROR: UNABLE TO FIND PRODUCTION ORDER ID RECORD	X						X
	FATAL ERROR: UNABLE TO FIND ROUTE PRODUCT CODE RECORD	X						X

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Table 14.4-6. Messag ction Matrix (cont'd)

CATEGORY	MESSAGE	DO NOT RE-RUN CPFIFB	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATION	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL (Cont'd.)	FATAL ERROR: UNABLE TO MATCH ROUTE PROCESS RECORD	X						X
	FATAL ERROR: UNABLE TO FIND MAIN IMAGE WRS RECORD	X						X
	FATAL ERROR: UNABLE TO MATCH MAIN IMAGE MID RECORD	X						X
	FATAL ERROR: PACKET SENSOR TYPE ID DOES NOT MATCH DATA BASE SENSOR TYPE	X					X	X
	FATAL ERROR: TABLE SIZE EXCEEDED ON PROGRAM - RECOMPILE PROGRAM	X					X	X
	FATAL ERROR:	X					X	X
WARNING	WARNING: FEEDBACK SCENE EXISTS WHICH HAS NO MATCH ON PROCESS REQUEST FILE		X		X			
	WARNING: PACKET DIRECTORY SCENE INFORMATION EXISTS FOR SCENE NOT IN FEEDBACK FILE		X		X			
	WARNING:		X		X			
INFORMATION	INFO: CURRENT DIRECTORY CONTAINS NO FILM FEEDBACK PACKET FILE NAMES TO PROCESS				X			
	INFO: THE INDEX IS UPDATED SUCCESSFULLY WITH THE FILE				X			
	INFO: FILM FEEDBACK PROCESSING ABORTED FOR FILM ROLL				X			
	INFO: ENGINEERING MODE FOR PACKET, NO PROCESSING				X			
	INFO: PROCESSING DISCONTINUED DUE TO VERIFICATION ERRORS ON FILE				X			
	INFO: BEING VERIFICATION OF FILE							

Table 14.4-6. Message/Action Matrix (cont'd)

CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN GPFIFB	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	DETERMINE AND PRINT DECNET FILE(S) IN ERROR	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATION	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
INFORMATION (Con't.)	INFO: GPFIFB PROCESSING STOPPED BY OPERATOR				X			
	INFO: FILM FEEDBACK PROCESSING STOPPED BY OPERATOR FOR PACKET				X			
	INFO:				X			
ERROR	ERROR: THE HDT-P TAPE HAS PREVIOUSLY BEEN PROCESSED. AN ARCHIVE PRODUCT RECORD EXISTS ON THE DATA BASE.		X					
	ERROR: THIS FILE IS NOT IN CURINX DIRECTION, -		X					
	ERROR: FEEDBACK ERROR CODE NOT FOUND IN DATA BASE ERROR, TEXT -		X					
	ERROR: MIXED PROCESSING MODE, ENGINEERING AND PRODUCTION		X					
	ERROR: PROCESS REQUEST FILE HDT-P/A TAPE ID NOT PRESENT IN DATA BASE		X					
	ERROR: INVALID DATIME GENERATED. INVALID VALUE IS		X					
	ERROR: INVALID NUMBER OF SCENES. INVALID VALUE IS		X					
	ERROR: FEEDBACK SCENE MISSING FOR SCENE IN PROCESS REQUEST FILE		X					
	ERROR: PACKET DIRECTORY FILE HAS SCENE INFORMATION MISSING FOR SCENE IN FEEDBACK FILE		X					
	ERROR: INVALID RESPONSE - -. RESPOND Y OR NO		X					
	ERROR:		X					

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ACTION

CATEGORY	MESSAGE	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATION	RESPOND PROPERLY	NONE	DETERMINE AND PRINT LECNET FILE(S) IN ERROR	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	DO NOT RE-RUN GPFIFB
OTHERS	DO YOU WISH TO CONTINUE PROCESSING? (Y/N)			X				
	DO YOU WISH TO PROCESS THIS FILM ROLL? (Y/N)			X				
	THE RECORD TYPE IS:				X			
	THE INTERNAL SCENE ID IS:				X			
	THE PRODUCT REQUEST TYPE IS:				X			

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14.4.5.3.3 Processing Scratch Files

The program will create several scratch files during feedback processing. If certain error conditions occur during processing, these files should be printed to aid in error correction. These files are:

a. Feedback scratch files (GPFIFB.IBS)

b. Packet directory scratch file (GPFIFB.IDS)

c. Cancellation scratch file (GPFIFB.CLF)

d. Regeneration scratch file (GPFIFB.RLF)

14.4.5.3.4 Processing Report Files

GPFIFB generates the following processing report files:

a. Processing summary file (GPFIFB.SUM) - reports on HDT/FILM feedback processing and any error messages associated with processing

b. Cancellation log file (GPFIFB.CAN) - identifies all scenes which were cancelled

c. Regeneration log file (GPFIFB.REG) - identifies all scenes which need regeneration

d. User interaction log file (GPFIFB.UIL) - details operator prompts and responses.

These report files are automatically printed via the job control language. The processing summary file will contain information displays, such as processing and error messages. These are shown in Table 14.4-6.

14.4.5.4 Operational Sequence

GPFIFB can be run by keying either of the following statements:

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a. @TAKE GPFIFB.CMD (for interactive processing)

b. @SUBMIT GPFIFB.CTL (for batch processing).

14.4.5.5 Program Scheduling

This program is normally initiated as part of the PEPG CCT/film completion notification transaction, which is activated by interval timer every 30 minutes.

When initiated manually as a separate program, it will be run by a production controller at a VT78 KCRT complex.

Program run time (wall clock) is estimated to be less than 5 minutes.

14.4.6 GPFLFB (LSD-MMF-CPD-2051) - GMS PHOTO LAB FEEDBACK

14.4.6.1 Summary

The GMS photo lab feedback process (GPFLFB) is initiated by the operator at a VT78 terminal in order to process the feedback information for 241 mm films. The operator is displayed a Traffic-20 "menu" screen which prompts for continuance or program exit. If continuance is selected the operator is then prompted for a photo lab process request file (FPR) name via another Traffic-20 screen. For each process request name entered, interface and application processes are performed. Processing continues by prompting the operator for another FPR name. If the operator responds with a line-feed command, the program displays the menu screen, and allows the operator to select either EXIT or continuance. If EXIT is selected the program is terminated after creating a cancellation log, a user interaction log, and a processing summary file.

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During the operator input interaction for each FPR file name, the input data is verified and stored in a feedback file. The operator will be providing file name, copies desired, film roll accept/reject, quality assessment or error code, and photo lab start/completion times, as acquired from the annotated photo lab process request listing (see Figure 14.4-1).

The contents of the feedback file are applied to the data base to update and close out the film process request file.

14.4.6.2 Input

14.4.6.2.1 Operator-Supplied

Operator inputs are required to run this module and are in the form of responses to Traffic-20 formatted screens. Table 14.4-7 details acceptable operator responses to the Traffic-20 screen prompts. The specific application of these responses to the Traffic-20 screens is shown in Figure 14.4-2.

14.4.6.2.2 Other

Feedback Files

Under normal circumstances, GPFLFB requires the photo lab process request file, (FPRXXX.FTB) as input. If certain error conditions occur during processing, this file should be printed to aid in error correction.

Data Base Files

GPFLFB requires the following data base files as input:

a. Archive-product

b. Common parameters

c. Production

d. Error text

e. Directory.

Table 14.4-7. GPFLFB

PROMPT	RESPONSE	EXPLANATION
GPFLFB Operating Mode Desired	1,2	1 = Exit program 2 = Continue
FPR File Name	FPR001 through FPR999	Name of the photo lab process request file to be processed.
Is the FPR Roll ID Valid?	Y N	Yes it is No it is not
Photo Lab Accept/Reject Decision	A R	Accept Reject
Number of Copies Desired	01-99	Number of copies which are desired
Date/Time Photo Lab Started	YY = year DDD = Julian date HH = Hours MM = Mins SS = Secs	Start date/time of the photo lab
Date/Time Photo Lab Completed	YY = Year DDD = Julian date HH = Hours MM = Mins SS = Seconds	Stop date/time of the photo lab
Quality Assessment or Error Code	PPL001 - PPL999 (error code) or 0-9 (Qual Assess)	Appropriate quality assessment or error code for each band present for scene

14.4.6.3 Outputs

The photo lab feedback processor produces the following outputs:

a. Operator displays

b. Updated data base files

c. Processing scratch files

d. Processing report files.

```
GPFLFB------------PHOTO LAB FEEDBACK (MENU SCREEN)------------GPFLFB

        GPFLB OPERATING MODE DESIRED:  0

              EXIT PROGRAM         -  1

              CONTINUE PROCESSING  -  2
```

Figure 14.4-2. Traffic - 20 Screens for GPFLFB

```
CPFLFB-----------------PHOTO LAB FEEDBACK (ENTRY SCREEN 1)---------------CPFLFB

            FPR FILENAME:  FPR001

            FPR ROLL ID        :  LAMLR8000201
            PROCESS REQUEST ID:  PPL810890001

         IS THE FPR ROLL ID VALID (Y/N) ?  -

            PHOTO LAB ACCEPT/REJECT DECISION (A/R) ?  A

            NUMBER OF COPIES DESIRED      :  01

            DATE/TIME PHOTO LAB STARTED   :  YYDDDHHMMSS

            DATE/TIME PHOTO LAB COMPLETED:  YYDDDHHMMSS
```

Figure 14.4-2 (cont'd)

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GPFLFB----------------PHOTO LAB FEEDBACK (ENTRY SCREEN 2)----------------GPFLFB

NASA SCENE ID : 4000401043
INTERNAL SCENE ID: 4T1391770004

AVAILABLE BAND NUMBER	BAND FRAME NUMBER	QUALITY ASSESSMENT OR ERROR CODE
1	1234	------

Figure 14.4-2 (cont'd)

14.4.6.3.1 Operator Displays

A list of operator prompts, appropriate responses, and informational messages are found in Tables 14.4-7 and 14.4-8. Sample Traffic-20 screens are shown in Figure 14.4-2. An invalid response is indicated to the operator by an error message requesting the operator to enter the correct values.

14.4.6.3.2 Files

Under normal processing conditions GPFLFB updates the following data base files:

a. Archive-product

b. Production

c. Directory.

GPFLFB also creates the following scratch file during feedback processing:

a. Cancellation scratch file (GPFLFB.CLF).

If certain error conditions occur during processing, these files should be printed to aid in error correction.

GPFLFB generates the following processing report files:

a. Processing summary file (GPFLFB.SUM) - reports on photo lab feedback processing and associated error messages (if any)

b. User interaction log file (GPFLFB.UIL) - details Traffic-20 screens displayed to and completed by the operator.

Table 14,4-8. ...ssage/Action Matrix

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CATEGORY	MESSAGE	RESPOND PROPERLY	NO ACTION REQUIRED	DO NOT RERUN ____	FORWARD OUTPUT TO SOFTWARE MAINT. STAFF	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	RETYPE VALID INPUT
ERROR	ERROR: OPERATING MODE WAS NOT A 1 OR 2						X
	ERROR: FPR FILE NAME SUFFIX IS NOT NUMERIC						X
	ERROR: FPR FILE NAME NOT FOUND IN DIRECTORY						X
	ERROR: INVALID RESPONSE, SHOULD ENTER A OR R ONLY						X
	ERROR: DATE OR TIME IS NOT VALID						X
	ERROR: INVALID RESPONSE, SHOULD ENTER Y OR N ONLY						X
	ERROR: NUMBER OF COPIES LESS THAN FPR FILE						X
	ERROR: INVALID ASSESSMENT CODE						
	ERROR: ERROR CODE NOT FOUND IN DATA BASE					X	X
	ERROR: THE ____ RECORD WAS NOT FOUND					X	
FATAL ERROR	FATAL ERROR: THE ____ RECORD WAS NOT FOUND					X	
	FATAL ERROR: CURRENCY COULD NOT BE ESTABLISHED FOR ____					X	X
INFORMATION	INFORMATION: ENTER FPR FILE NAME TO CONTINUE, LINE FEED TO EXIT SCREEN	X					
	INFORMATION: YOU INDICATED MORE COPIES THAN REQUIRED FPR # COPIES WILL BE USED		X				
WARNING	WARNING: ARCHIVE PRODUCT CURRENT FACILITY IS ____		X				
OTHER	OTHER: END OF PROCESSING		X				

These report files are automatically printed via the job control language.

14.4.6.4 Operating Sequence

GPFLFB can be initiated by entering either of the following statements:

a. @TAKE GPFLFB.CMD (for interactive processing)

b. @SUBMIT GPFLFB.CTL (for batch processing).

A "menu" screen is displayed to the operator which directs him to select "continue processing" or "exit". If "exit" is selected, the program terminates. If "continue" is selected, entry screens #1 and #2 (see Figure 14.4-2) will be presented for input data. The operator can recall the "menu" screen at any time by entering a line-feed control key.

14.4.6.5 Program Scheduling

This program is normally executed at the discretion of the production controller whenever a representative number of 241 mm film rolls have been processed. With the anticipated PEPG film requirements, once daily is the expected frequency. The program is run by the production controller at a VT78 KCRT complex in Building 23.

Program run time (wall clock) is estimated to be less than 5 minutes.

SECTION 15

ARCHIVE DISSEMINATION

15.1 ENVIRONMENT/RESOURCES

The processing associated with archive dissemination is performed in the MSS Mission Management Facility (MMF-M) on the DEC2050 system. Figure 15-1 provides a high level block diagram of the MMF-M hardware subsystem.

The software used to perform archive dissemination includes the following programs:

a. GGGHAM - GHIT Generation

b. GPDGEN - GMS DRRTS Process Request Generator

c. GSARGN - Archive Regeneration Request Entry

d. GXDREC - DRRTS Data Receive

e. GQHASS - HDDR Product Assessment Entry

f. GPUCFB - GMS DRRTS Uplink and Copy Process Request Feedback

g. RSPACO - Product/Acquisition Request Closeout

h. RSUOCO - User Order Closeout.

15.2 OVERVIEW/BACKGROUND

Upon completion of an archival HDT-AM tape product in MIPS/MAG, the HDT-AM product evaluation process (PEP) screens all HDT-AM tapes prepared by MAG for validity of the non-image data, and for accuracy of the geometric and radiometric corrections. When PEP completes its HDT-AM evaluation, the results are sent to the PEP completion notifier in MMF in the form of product evaluation

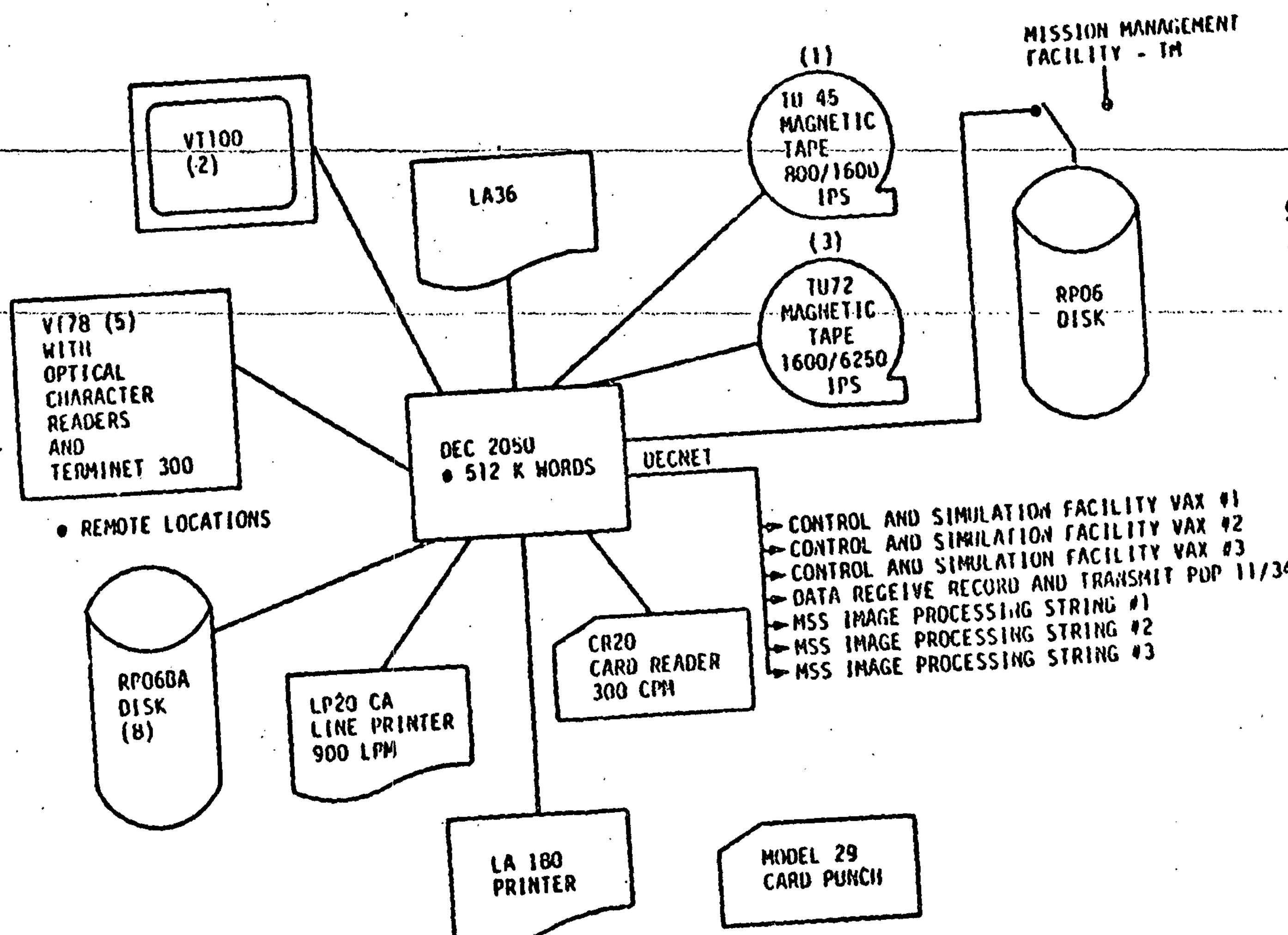

Figure 15-1. Hardware Subsystem of the MMF-M

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feedback containing PEP status and HDT-AM scene evaluation.

The MSS archive dissemination scheduler receives the product evaluation feedback from PEP, and according to this evaluation, either extracts the HDT-AM scene evaluation data to generate rework requests for bad scenes or updates the GHIT-AM scene evaluation records. The scheduler then checks the status of the Domsat link to EDC in preparation for generating an uplink process request.

If the Domsat link is operational, the scheduler generates the request that results in the transmission of the HDT-AM to EDC by DRRTS via Domsat.

To account for the generation of archival products a GHIT-AM tape is generated which contains a daily inventory of MSS A-tapes. The GHIT-AM tapes are subsequently sent to the IPF in Building 23 for transmission to EDC over land lines.

Figure 15-2 illustrates the relationship of the archive dissemination functions to each other and to preceding and succeeding functions.

15.3 FUNCTION DESCRIPTION

The archive dissemination function is composed of three major processing operations or transactions:

a. Archive dissemination scheduling - this transaction (Figure 15-3) generates a DRRTS process request for each archive product in the MMF data base with a status of "ready for DRRTS".

b. Archive dissemination completion - this transaction (Figure 15-4)

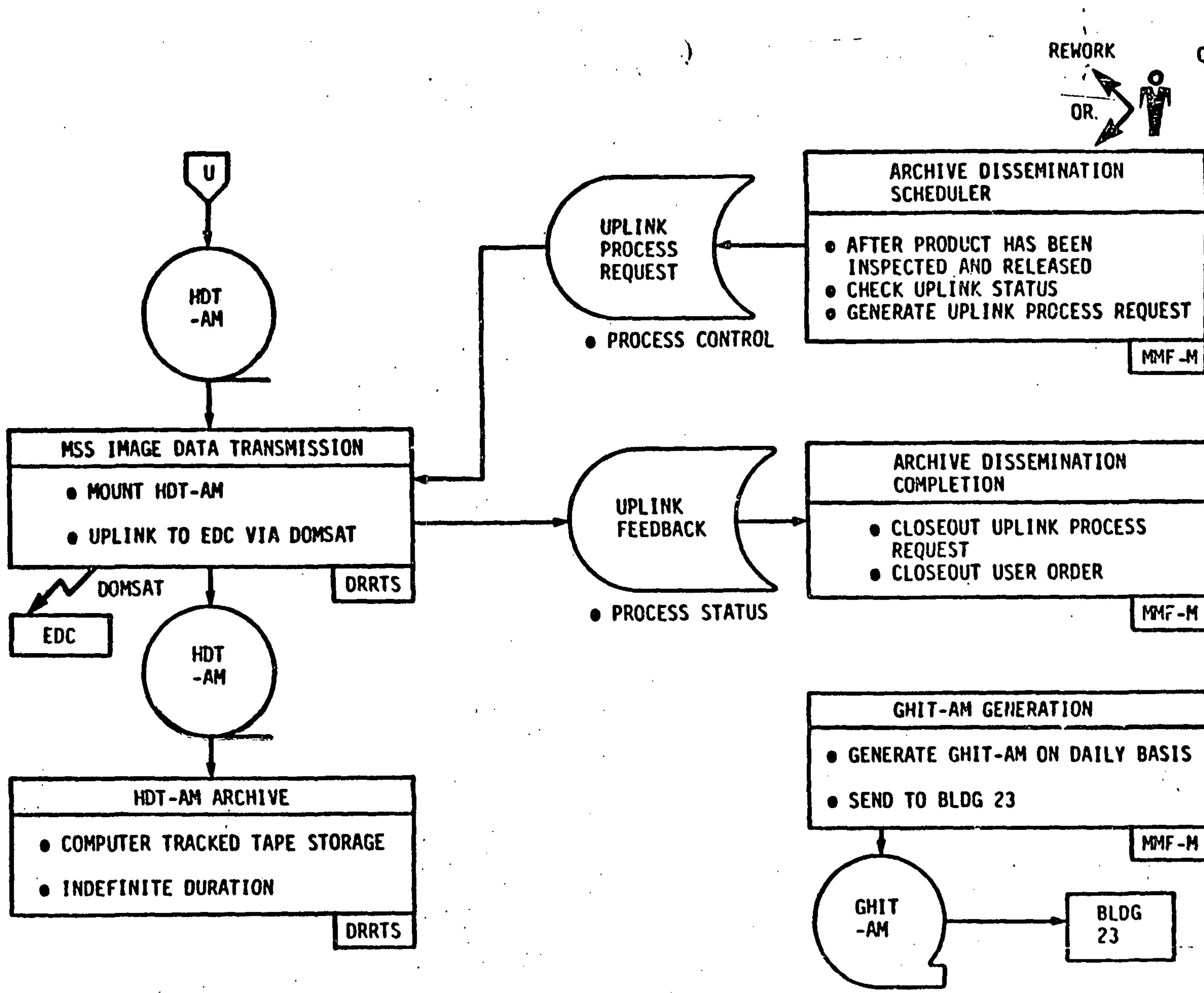

Figure 15-2. MSS Archive Dissemination

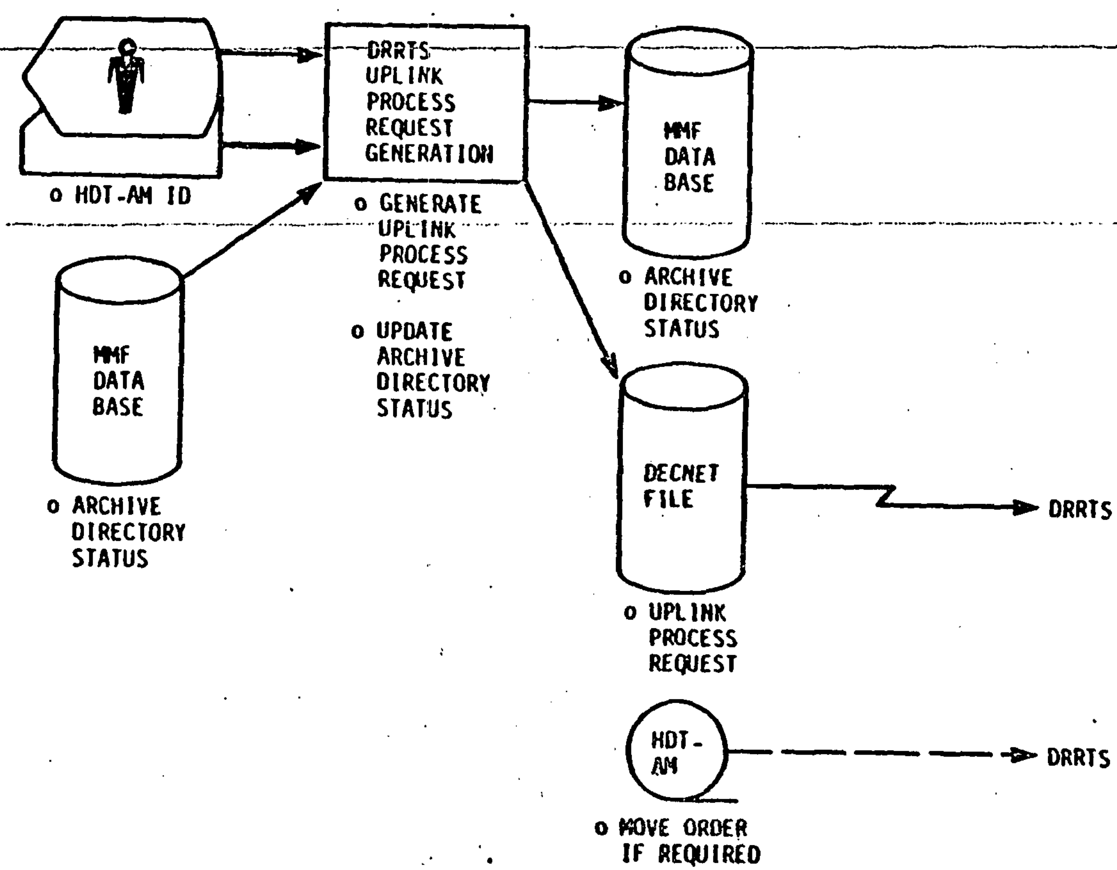

Figure 15-3. Archive Dissemination Scheduler

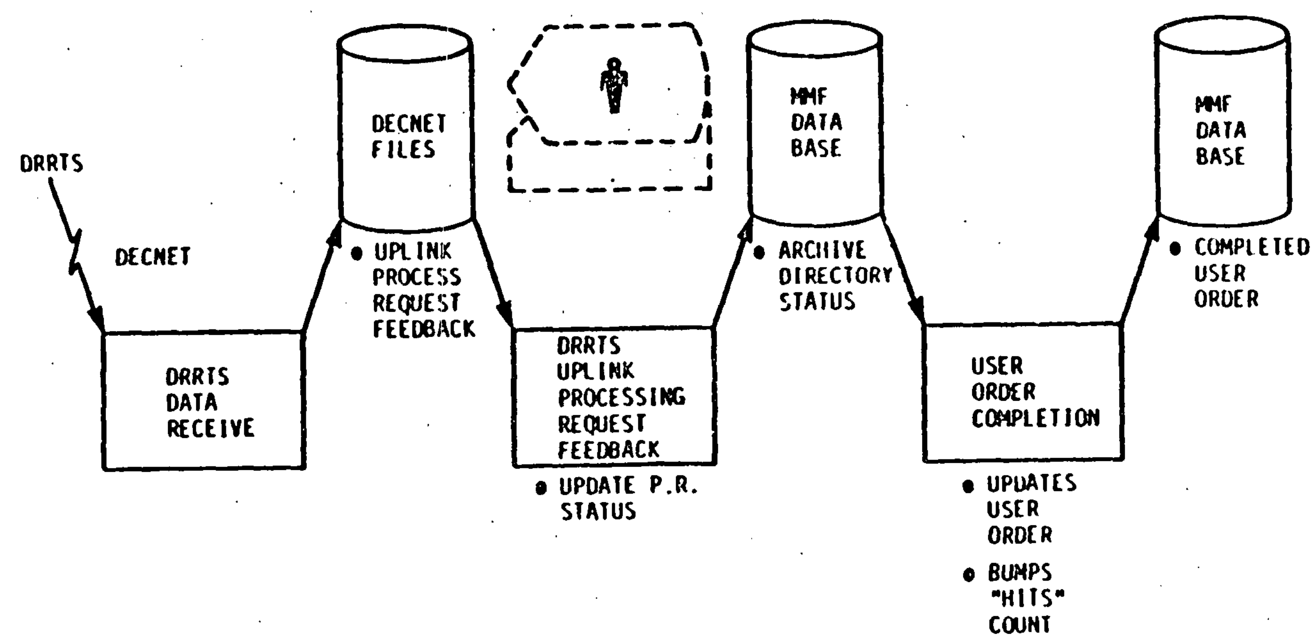

Figure 15-4. Archive Dissemination Completion Notifier

receives and applies feedback information about DRRTS uplink activities to the HMF data base and closes out the user order for the archive product.

c. GHIT-AM generation - this transaction (Figure 15-5) generates a Goddard HDT inventory tape for each HDT-AM listed in the archive product directory.

15.4 PROCESS OPERATIONS

Based on inputs from a QA specialist, the archive dissemination function is performed once or twice a day by a production controller as needed to support operational requirements. Estimated run time for all dissemination processes is 20 minutes per HDT-AM. The function is assigned medium priority except when close to the scheduled uplink window, when it is assigned a high priority.

The processes making up the archive dissemination function are described in more detail in the following paragraphs.

15.4.1 ARCHIVE DISSEMINATION SCHEDULER

Depending on the evaluation of the HDT-AM quality, the archive dissemination scheduler flags the product as either ready for uplink or as requiring product regeneration. If the product is statused as ready for uplink, the program GPDGEN is used; if it requires regeneration the GSARGN program is used.

15.4.1.1 DRRTS Process Request Generation (GPDGEN)

The DRRTS process request generator program is designed to operate in either of two modes: automatic or manual. In automatic mode, all archive products with a

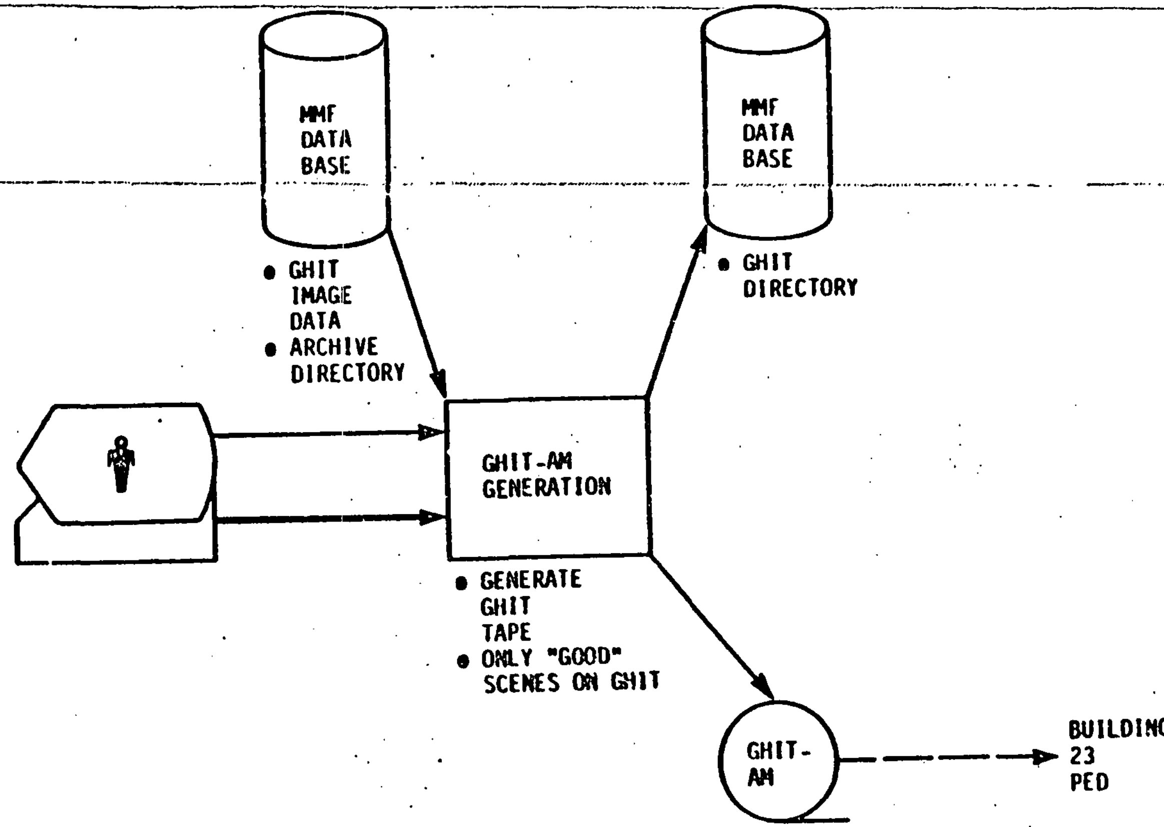

Figure 15-5 GHIT Generation

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status of "Ready for DRRTS" are automatically scheduled for copy and/or uplink at the DRRTS facility. In manual mode, the operator is asked whether or not to process each archive product. In either case, HDT-A and HDT-Ps are scheduled for copy/uplink and a DRRTS process request Decnet file is generated for each archive product which is accepted and processed.

The operational mode (automatic or manual) is determined by a switch in the common parameter area of the data base. If the outstanding products override flag is set, a HDT is scheduled for DRRTS even if there are final products yet to be made from the HDT. Three uplink flags, one for each type of HDT, indicate whether that type of tape is allowed to be uplinked or not. Two IRIG time modifiers are used to alter the start/stop times.

For each archive product record that is ready for DRRTS, necessary processing is performed to create a DRRTS process request file for that archive product. By examining the archive product record, a determination is made as to whether a tape is a copy candidate or an uplink candidate. If a tape is an uplink candidate and if the automatic copy request flag is set in the common parameter area of the data base, then a copy process request file will be generated as well as the uplink process request file.

To process a tape, there must be at least one good scene present on the tape. To determine this, all scene records in the archive product area are scanned, and the production area is examined to determine the number of copies to be made. If at least one good scene was found, then the tape will be processed;

otherwise, the status will be changed to "complete" and the next archive product will be retrieved. For those tapes which are processed, a DRRTS process request Decnet file will be generated and the archive product and production areas of the data base will be updated to reflect the new status of the archive product.

Finally, all of the DRRTS process request files created in the program are transferred to the TOPS-20 directory index for files to be sent to DRRTS and a processing summary report is printed. A data flow diagram for GPDGEN is shown in Figure 15-6.

Several types of messages can result from processing. These messages can have a variety of forms, such as operator displays or processing summary messages. Generally, the messages will conform to the following standards:

a. Information.

Messages of this type are preceded by the phrase "INFORMATION" and describe general processing information such as file names, tape IDs and processing activities. They require no operator action by themselves.

b. Warning.

These messages are preceded by the phrase "WARNING". Warning messages in GPDGEN refer to cases in which the current facility of the HDT is not DRT. This alerts the operator to this fact before he makes a final processing decision.

c. Error.

This type of message is preceded by the phrase "ERROR" and results

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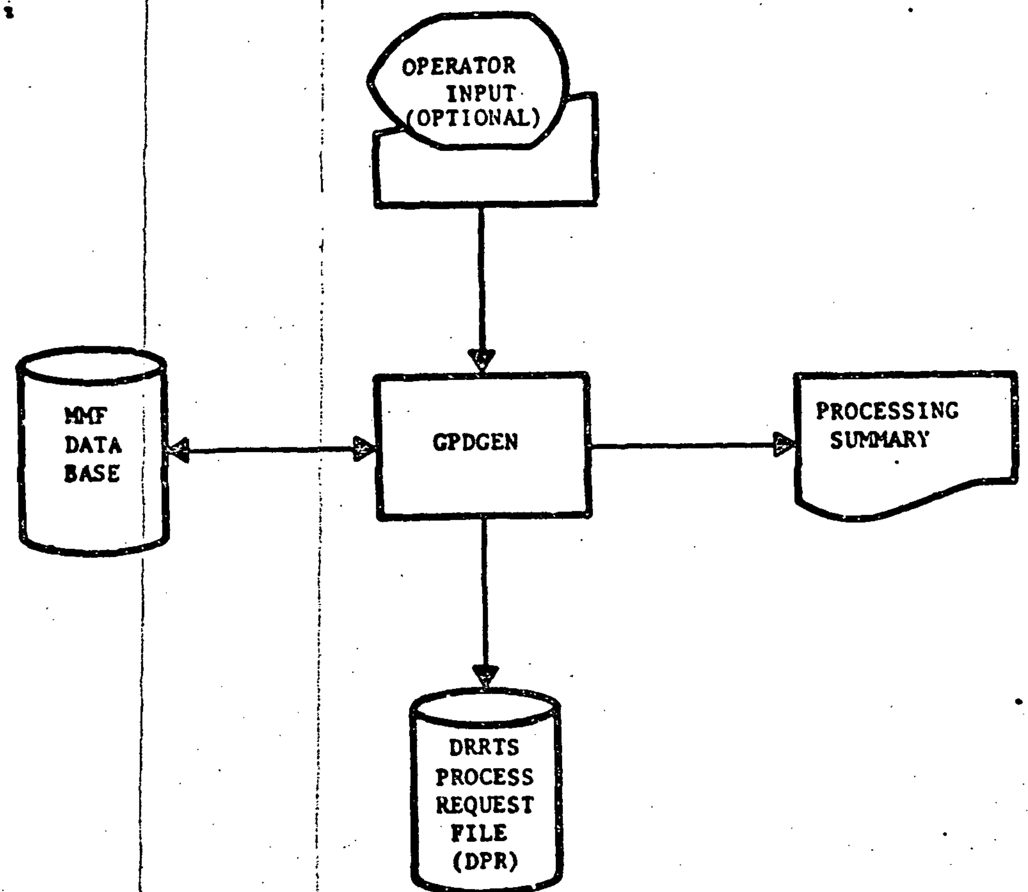

Figure 15-6. GPDGEN Data Flow Diagram

from an invalid operator response to a program prompt. The only valid operator response to program prompts are "Y" and "N". Operator action is required for these messages.

d. Fatal Error.

These messages are preceded by the phrase "FATAL ERROR" and indicate a serious malfunction or inconsistency in the data base or records within the data base. A fatal error also results from an operator entry of a Control-C. These messages indicate a situation serious enough so that the program cannot be continued, and error termination will result.

15.4.1.2 Archive Regeneration Request Entry (GSARGN)

GSARGN regenerates archive-product requests for HDT-R tapes that have been listed in the archive regeneration logs or the Quality Assurance (QA) personnel's HDT-R vs. HDT-A listing. These logs were generated by the feedback processor or by QA whenever it was found that a product request was not completed satisfactorily and the product had to be regenerated from the R-tape.

Requests are remade for the A-tape on an interval/scene basis. The archive regeneration log or the HDT-R vs. HDT-A listing contains the list of HDT-R tape IDs, their intervals and all their scenes that must be reprocessed. With either of these listings in hand, the operator initiates GSARGN and proceeds to enter the R-tape IDs. Each tape ID entered is verified for format and checked to see that its records exist in the archive product area of the data base and is of the proper sensor type. (Further verification includes the following: its status

must be either 'DRP' or 'COM'. Current facility must be DRRTS or TAS and send-to-facility must not be DEGAUSS). Each interval entered must have its corresponding archive interval record in the data base, and all its scenes or selected scenes must have their corresponding ancillary scene information in the ancillary area of the data base as well. If the ancillary information for the scene's intervals or orbits is not available, a missing ancillary data listing is generated. Once the request is validated in the manner described above, the main image record of the scene (if present) is updated and the scene's product acquisition record is updated/created using this main image record and the common parameters (user-ID, product-code) if necessary.

Figure 15-7 illustrates the archive regeneration request entry flow.

The archive regenerator request entry, GSARGN, runs manually under operator control. This module regenerates archive requests for scenes on HDT-R tapes as indicated on a regeneration log or as specified by the Quality Assurance personnel.

Operator inputs are in the form of responses to program prompts.

GSARGN requires the following data base files as inputs:

a. Archive/product

b. Production

c. Common parameter

d. Ancillary

e. Main image.

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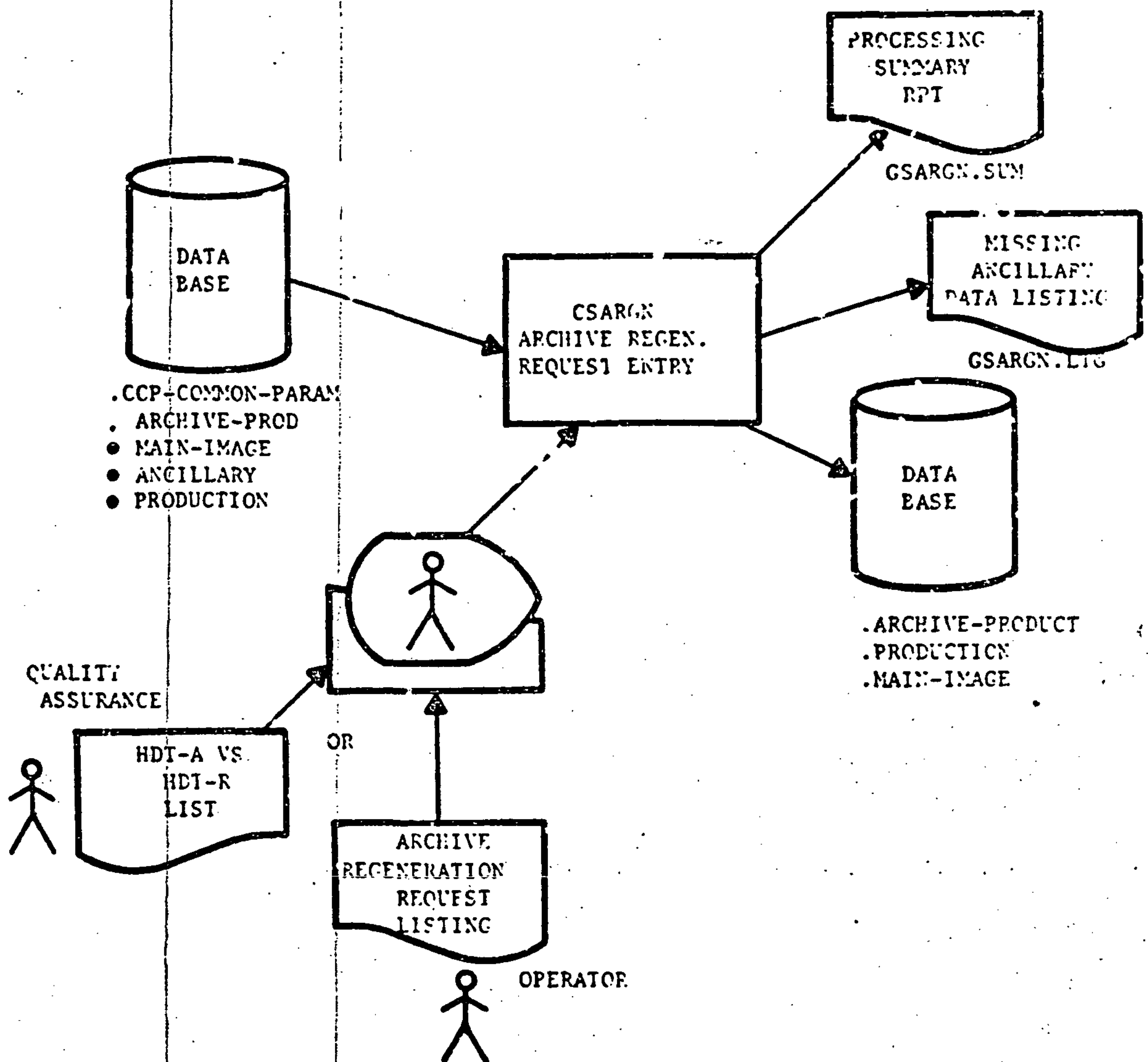

Figure 15-7. Archive Regeneration Request Entry Flow Diagram

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The archive regeneration request entry produces two types of outputs: operator displays and updated data base files/disk files.

GSARGN updates data base files as part of its processing function. With normal processing, GSARGN updates the following data base files:

a. Archive/product

b. Production

c. Main image.

GSARGN will also create a summary processing report file (GSARGN.SUM) and a user interaction log file (GSARGN.UIL). The summary report file summarizes the processing completed by GSARGN, while the user interaction log file details the operator prompts and responses. These report files are printed via the job control language. An optional missing ancillary data listing (GSARGN.LTG) is created for any scene ancillary data found to be missing from the ancillary area of the data base.

15.4.2 ARCHIVE DISSEMINATION COMPLETION

After generating an uplink process request, the archive dissemination function awaits a feedback from DRRTS that the products have indeed been uplinked to EDC via Decnet so that request completion processing can be performed. Archive dissemination completion processing utilizes the following programs:

a. GXDREC - DRRTS Data Receive

b. GQHASS - HDDR Product Assessment Entry

c. GPUCFB - GMS DRRTS Uplink and Copy Process Request Feedback

d. RSPACO and RSUOCO - User Order Completion.

15.4.2.1 DRRTS Data Receive Processing (GXDREC)

GXDREC is activated automatically as part of the process request feedback transaction. The program queries the feedback file in DRRTS to see if there is any information to be transferred to the MMF Ground Management Subsystem over Decnet. If there is a file for transfer the program effects that transfer.

15.4.2.2 HDDR Product Assessment Entry (GQHASS)

Associated with every use of an HDDR product, the quality of the image data on the tape is evaluated. The purpose of HDDR product assessment entry program (GQHASS) is to record quality information about HDTs and images in the product assessment area of the MMF data base. The program, which is designed to run in automatic mode, may be initiated by either the operator or by the HDDR assessment entry program. The quality information to be processed consists of two kinds of data: image quality and HDT quality.

Image quality refers to the quality of the contents of the tape. Whenever an HDT is created, the quality of the images on the HDT is determined and entered into an image quality data file (IQDXXX).

HDT quality refers to the quality of the physical HDT itself. Whenver au HDT is read or written (which may occur many times for a given HDT), the quality of the physical HDT is determined and entered into an HDT quality data file (PAYXXX).

GQHASS runs in automatic mode only. In this mode, all IQDXXX image quality data

files and PAYXXX quality data files which are listed in the index of current files for the IRC, PRC, and DRC directories will automatically be processed. GQHASS uses the archive product, common parameter, directory, and product assessment areas of the data base. Only the product assessment area, however, is updated.

15.4.2.3 DRRTS Uplink Process Request Feedback Processing (GPUCFB)

GPUCFB is the DRRTS uplink and copy feedback processing program. It applies feedback information about DRRTS uplink and copy activities to the data base.

As DRRTS fulfills HDT uplink and copy process requests, it creates a feedback file containing relevant information about the HDT processing. Periodically, these files are transferred to the Ground Segment management subsystem over Decnet. At this point GPUCFB accesses these feedback files and applies them to the data base.

GPUCFB is normally activated automatically as part of a transaction. The operator may activate GPUCFB from a terminal at any time.

When activated GPUCFB retrieves the operating parameters that it needs from the common parameter area of the data base. GPUCFB locates and opens every DFB file in the TOPS-20 directory index for "DRRTS received" files. For each DFB file GPUCFB locates and retrieves the corresponding DPR file and verifies the DFB file against it. If the verification was successful, GPUCFB applies the DFB file to the data base. After all DFB files have been processed, GPUCFB prints a regeneration log, a cancellation log and a summary report.

In the manual mode, the operator is given the option of processing or rejecting each DFB file.

Input files consist of:

a. DRRTS uplink and copy feedback file (DFBXXX) contains the feedback information regarding an HDT uplink or copy sent from DRRTS.

b. DRRTS uplink and copy process request file (DPRXXX) contains process request information to uplink or copy an HDT tape which was sent to DRRTS.

c. Processing mode, which indicates whether the program is to be run in an automatic or manual mode. This is derived from information in the common parameter area of the Landsat-D MMF data base.

d. Various thresholds which determine if the processing for a specific HDT should be cancelled. These thresholds are obtained from the common parameter data base.

e. Data base sensor type, which is used to ensure proper processing of sensor type.

Outputs consist of:

a. Mission Management Facility (MMF) data base:

1. Key field of APK record of data base is updated
2. Status field of APS record of data base is updated
3. Acquisition request record (PAQ) of data base
4. Production request record (PPD) of data base
5. Production status record (PPS) of data base
6. Archive product scene record (AAS) of data base

b. Cancellation log

c. Regeneration log

d. Processing summary.

Figure 15-8 illustrates the interactions between GPUCFB and the MMF data base, and its interactions with process request and feedback files.

15.4.2.4 User Order Completion Processing (RSUOCO/RSPACO)

The user order completion process consists of the program RSUOCO, user order closeout, and the program PSPACO, the product/acquisition request closeout. These programs close out the user area of the MMF data base and the associated product requests when the archive dissemination function indicates that they have been completed.

RSUOCO and RSPACO are standalone programs requiring no operator interaction.

The user order closeout process (RSUOCO) goes through the user-support area of the Landsat-D data base to update user and user order statuses. That is, it cancels users and/or user orders and deletes them when marked "complete" (COM) or "cancel" (CAN). Conditions involved are as follows. If a user stop-date has passed and there are no orders in progress, the order record is marked "complete". If an order record is in "cancel" status, it will be changed to "delete" (DEL) if no orders are in production and if the acquisition and product hits to date satisfy those desired. If any particular user is in a state of "cancel," it will be changed to "delete" only if the associated order records

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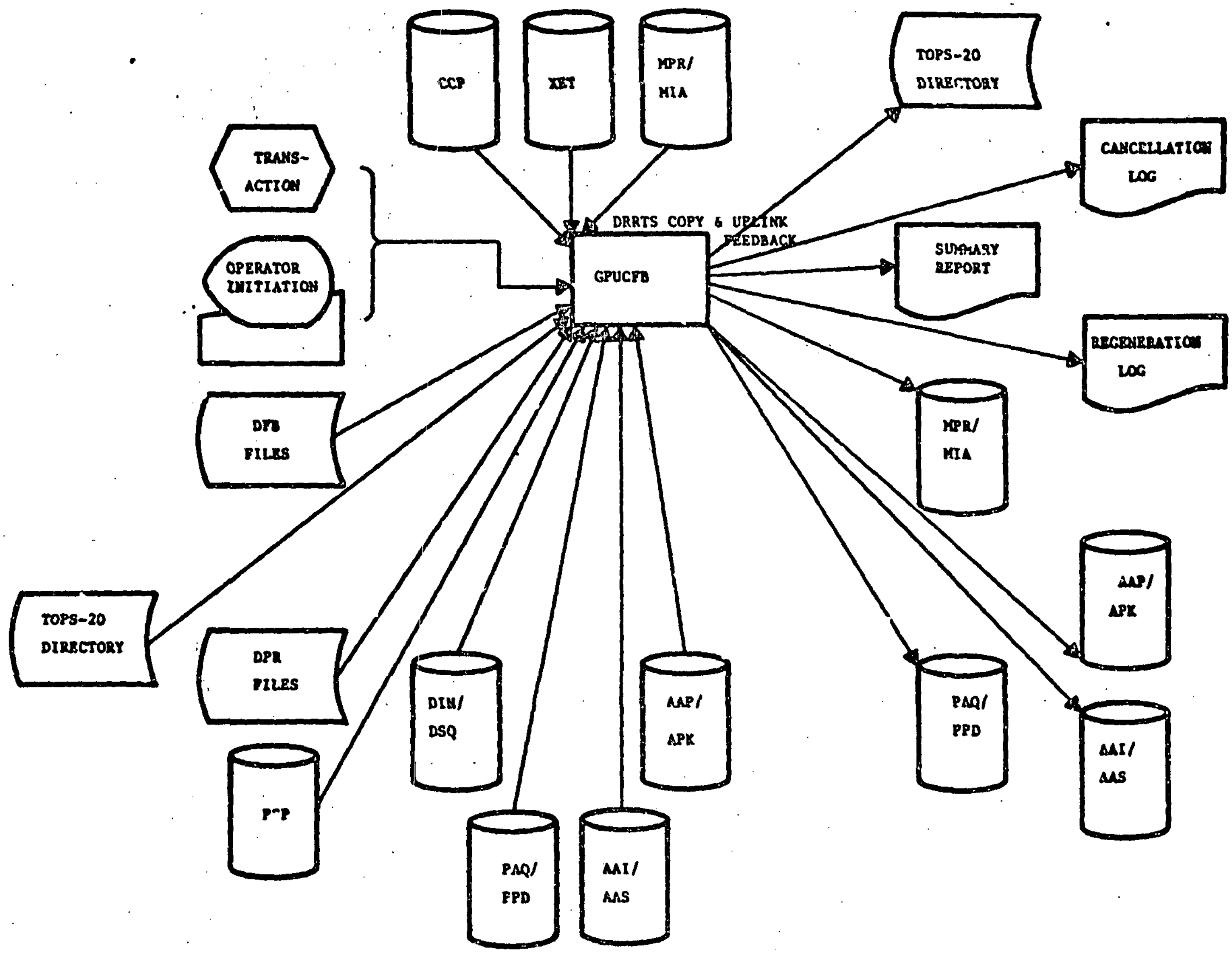

Figure 15-8. DRRTS Copy and Uplink Feedback Data Flow

are marked either "delete" or "complete". The status changes and the related numbers of changes are written to a summary file.

The product/acquisition request closeout process (RSPACO) retrieves the production status records from the production area of the MMF data base. Each record is associated with a group of acquisition and/or product requests. Each request is associated with a request order link record. Using the request order link information as a pointer, the user order header and path/row records are retrieved from the user/support area of the MMF data base. At each step the retrieved records are tested against information from the production area records for matching. When the matching criteria are satisfied, the user header and user path/row records are updated. Processing continues until all production status records have been examined. A summary report is written at the end of the process.

Input consists of the MMF Landsat-D data base, user support and production areas.

Output consists of:

a. MMF Landsat-D data base, user support and production areas
b. Process summary file for RSUOCO - list of items affected by the process run
c. Process summary file for RSPACO - list of items affected by the process run
d. Production processing logs for both RSUOCO and RSPACO.

The data flow for the user order completion process is shown in Figure 15-9.

15.4.3 GHIT-AM GENERATION

The Goddard HDT Inventory Tape is produced daily to provide an accounting of the archive products generated for the EROS Data Center. A GHIT-AM is generated for each HDT-AM produced. The GGGHAM program is the MMF Ground Management Subsystem activity which supports the creation of GHITs for the dissemination of HDT-AMs.

15.4.3.1 GGGHAM

The GHIT generation (GGGHAM) program is run in the manual mode, initiated by the operator who specifies the HDT-AMs which are to be shipped. During the process (see Figure 15-10) GGGHAM processes the information supplied by the operator and already recorded in the MMF data base.

The specified list of HDT-AM IDs are keyed into the processor in response to program prompts. GGGHAM requires the following data base files as input:

a. GHIT

b. Main image

c. Archive product

d. Common parameter.

To create a GHIT, the GHIT (HDT-AM) generation process first reads the HDT-AM identifiers that the operator types in through the terminal. When this input is complete, the process has a list of the HDT-AMs in the shipment and is ready to start writing the GHIT. MSS A-tapes differ from other HDTs by having more than one label. Two to five labels are written on a 28-track HDT-AM. The first

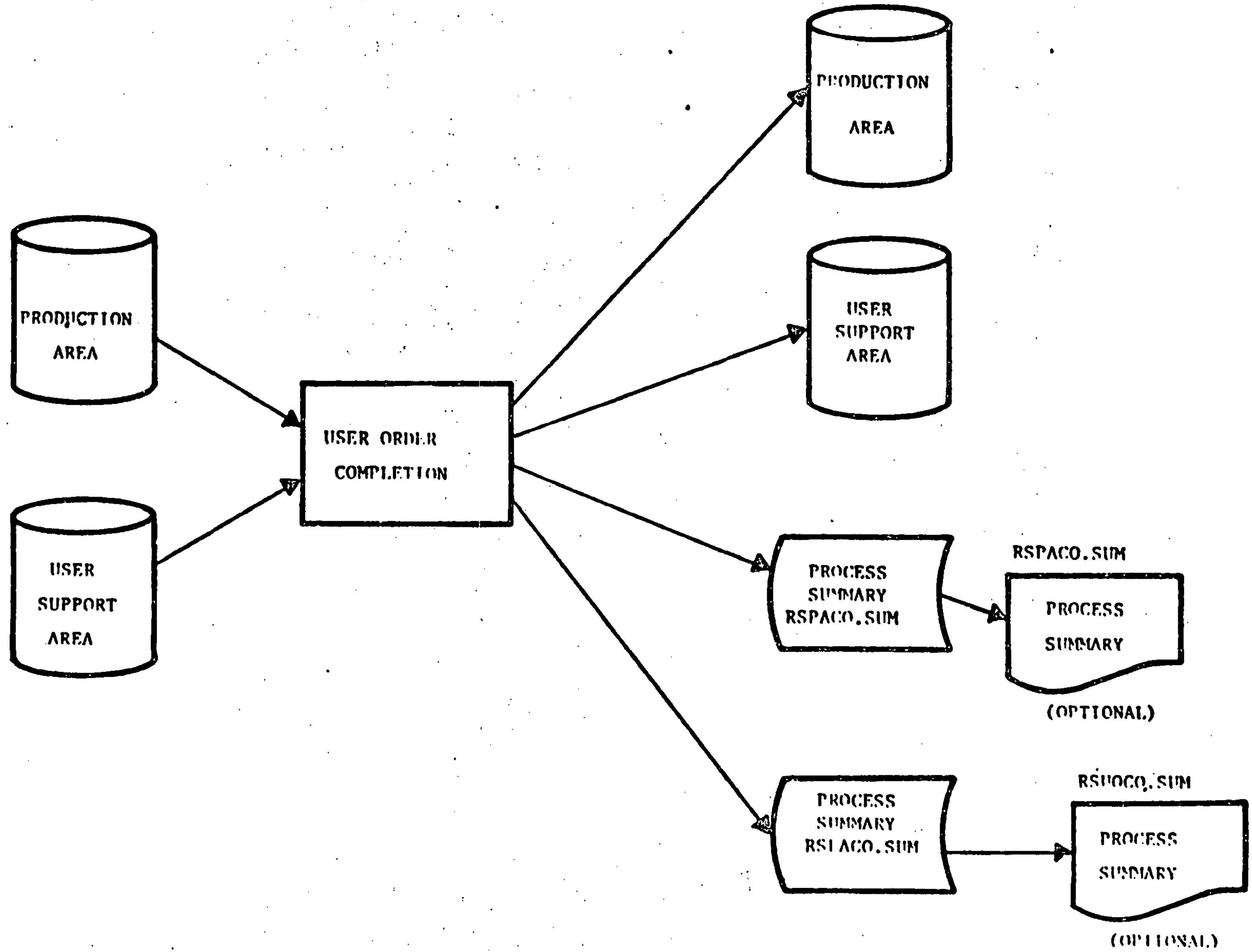

Figure 15-9. User Order Completion Data Flow

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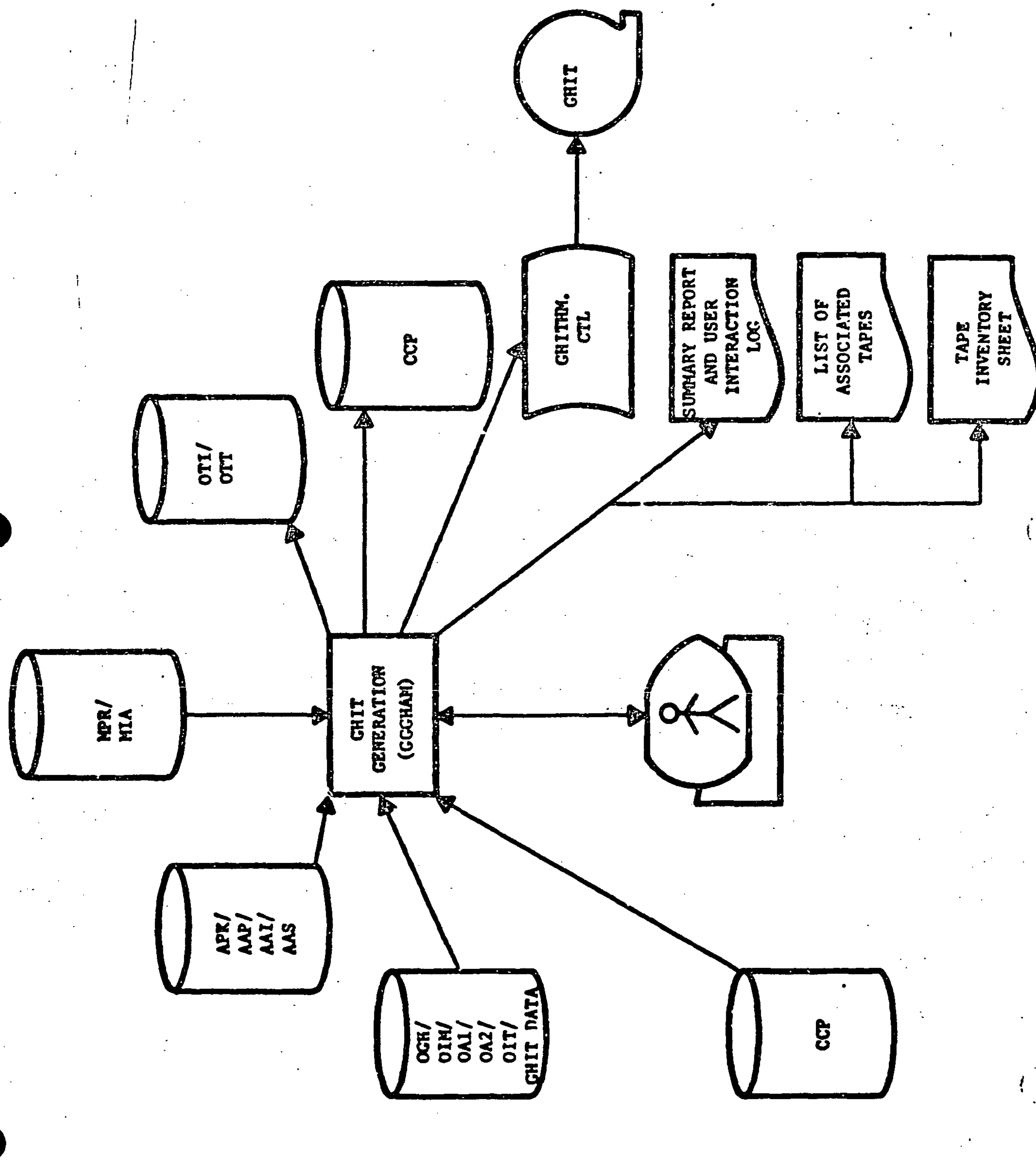

Figure 15-10. GHIT Generation Data Flow

label identifies the tape itself, while the succeeding labels identify spans of image data, each of which is expected to fit on one 14-track HDT. HDT-AM identifiers for consecutive 28-track tapes always differ by five sequential label increments. Labels on the tape itself are always sequential.

When a 28-track tape is copied to 14-track tapes the extra labels are also copied, one to a tape. These labels then identify the 14-track tapes on which they are written.

The archive product directory will contain an entry with a particular HDT-AM identifier only if that tape exists. At the time a 28-track HDT-AM is made, its identifier in the first label record is entered in the archive product directory, but its succeeding tape identifiers are not. If one of these succeeding identifiers is looked up in the archive product directory, it will not be found, indicating that a 14-track copy of 28-track HDT-AM does not exist.

The first step in writing the GHIT is to assemble the HDT directory. The GHIT (HDT-AM) generation process looks up each HDT-AM identifier in the archive product directory.

From each HDT-AM identifier the process makes one entry in the HDT directory from corresponding information in the archive product directory. It then writes the complete HDT directory to the GHIT.

For each HDT-AM identifier read from the operator's terminal the process writes relevant information onto the GHIT. This information consists of an image

directory of images recorded on the HDT and a number of records of descriptive data for each image.

The HDT image directory is created from information in the archive product directory and the main image file. Information from these two sources, corresponding to the HDT-AM currently being processed, is retrieved and organized in the image directory. When completed, the image directory is written onto the GHIT.

The GHIT data entries contain all descriptive information required by the GHIT (HDT-AM) generation process. For each image on the currently referenced HDT-AM, the process retrieves corresponding header, annotation, and trailer records from the GHIT data entries and writes them onto the GHIT.

When the GHIT is completed the GHIT (HDT-AM) generation process updates the GHIT product directory with a new entry describing the GHIT. Information in this entry identifies the GHIT, describes its production, and lists the HDTs recorded on it.

The GHIT generation program produces four types of output:

a. Operator display
b. Updated data base files
c. Processing report files
d. Control files.

GGGHAM also generates the following processing report files:

a. Processing summary file (GGGHAM.SUM) - Consists of GHIT ID, physical tape ID, logical tape ID, NASA scene ID, path/row of the scene, average cloud cover, band quality codes and indication of the scene, whether it's written on the GHIT tape or not.

b. User interaction log file (GGGHAM.UIL) - Details operator prompts and responses.

c. GHIT tape inventory sheet (GGGHAM.INV) - Consists of GHIT ID, tape ID, scene ID, sensor type, band, image IRIG start/stop times, average cloud cover and archive regeneration flag.

d. GHIT list of associated tapes (GGGHAM.LTG) - Identifies the GHIT ID and tape IDs written on that GHIT tape.

These report files are automatically printed via the job control language.

The control submit file and command file created by GGGHAM are:

a. GHIT control submit file (GHITHM.CTL) - Creates a GHIT for the given shipment of HDT-AMs.

b. GHIT command file (GHITDP.CMD) - A command file, which submits the GHITHM.CTL file.

SECTION 16

UPLINK/COPY PROCESSING

16.1 ENVIRONMENT/RESOURCES

All data uplink and HDDT copying for the Landsat-D Ground Segment is performed within the Data Receive, Record and Transmit system (DRRTS) of the Image Generation Facility (IGF).

16.1.1 SOFTWARE ENVIRONMENT

Figure 16-1 illustrates the DRRTS software components (excluding RSX-11M) that make up the DRRTS software environment. The purpose of each is briefly explained in the following paragraphs. This software is divided into two groups as indicated below:

a. DRRTS application software
   1. Operator interface task
   2. Operation monitor tasks
   3. Directory generation tasks
   4. MMF service task
b. DRRTS system software
   1. Synchronized time code generator driver
   2. Matrix switch driver
   3. Landsat format synchronizer driver.

16.1.1.1 Operator Interface Task

The operator interface task is the DRRTS task that performs all communication

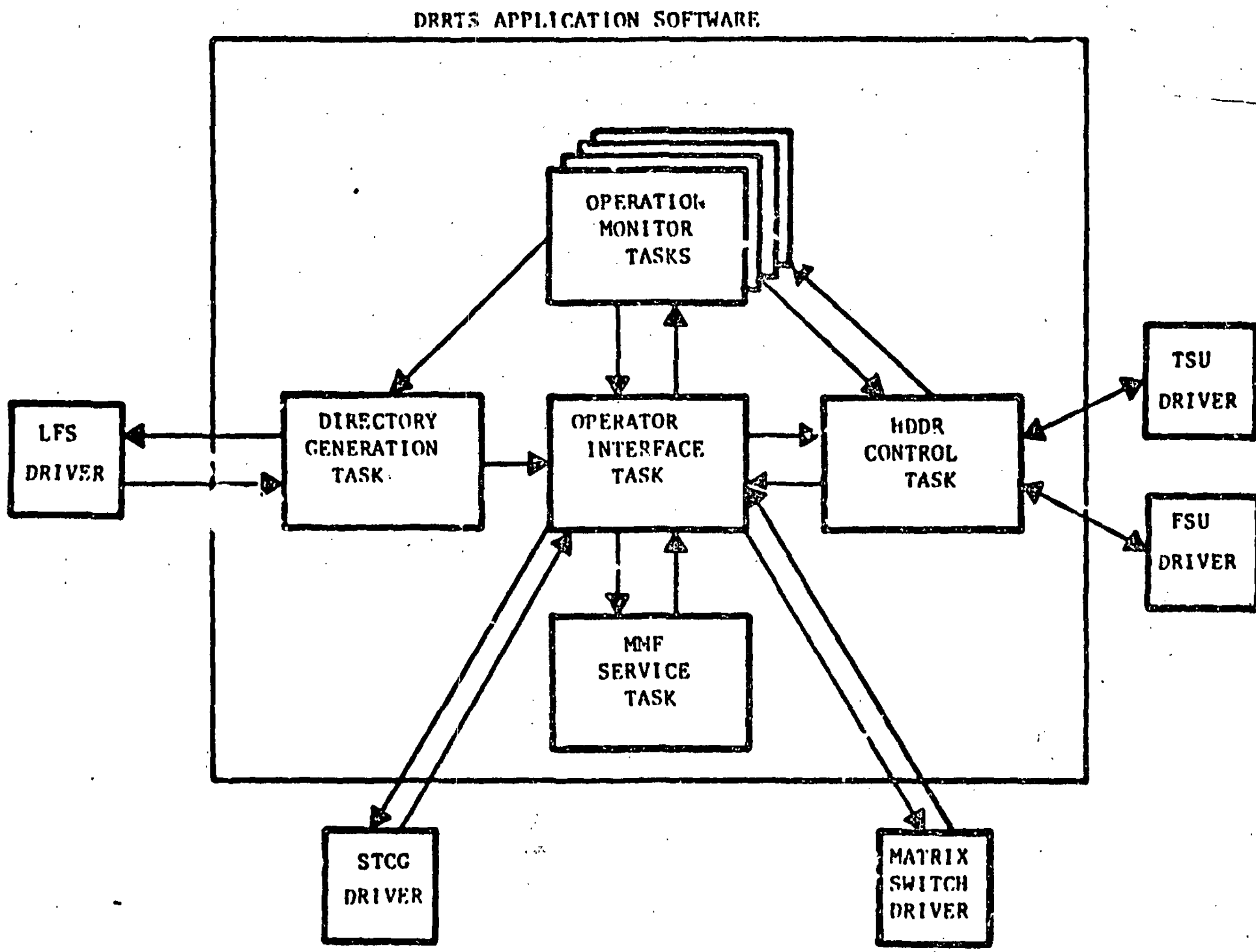

Figure 16-1. DRRTS Software Components

with the operator. It allows the operator to initiate all operation related activities as well as manual functions and all reports.

The operator interface task is implemented in PDP-11 Fortran IV Plus. Its detailed design is documented in the CPDS, LSD-IGF-CPD-3080.

16.1.1.2 Operation Monitor Task

The operation monitor tasks are the DRRTS tasks that control the active operations. One operation monitor task is required for each active operation. Since a maximum of four concurrent operations are possible, there are four operation monitor tasks.

The operation monitor tasks are implemented in PDP-11 Fortran IV Plus. Its detailed design is documented in the CPDS, LSD-IGF-CPD-3303.

16.1.1.3 Directory Generation Task

The directory generation task is responsible for interfacing with the Demux hardware and generating several data files during any operation that performs directory generation.

The directory generation task is implemented in PDP-11 Fortran IV Plus. Its detailed design is documented in the CPDS, LSD-IGF-CPD-3003.

16.1.1.4 MMF Service Task

The MMF service task is the DRRTS task that handles file transfers with the Mission Management Facility using either Decnet or computer compatible tape.

The MMF service task is implemented in PDP-11 Fortran IV Plus. Its detailed design is documented in the CPDS, LSD-IGF-CPD-3004.

16.1.1.5 Matrix Switch Driver

The matrix switch driver is the DRRTS special purpose driver that interfaces with both the digital and analog matrix switches. These switches are used to make connections between all DRRTS special purpose hardware devices.

The matrix switch driver is implemented in PDP-11 Macro Assembly Language. Its detailed design is documented in CPDS, LSD-LAS-CPD-4019.

16.1.1.6 Synchronized Time Code Generator Driver

The synchronized time code generator driver is the DRRTS special purpose driver that interfaces the synchronized time code generator. It allows reading the current time code under operator control.

The synchronized time code generator driver is implemented in PDP-11 Macro Assembly language. Its detailed design is documented in CPDS, LSD-IGF-CPD-3131.

16.1.1.7 Landsat Format Synchronizer Driver

The Landsat format synchronizer driver is the DRRTS special purpose driver that interfaces the Landsat format synchronizer, which extracts selected data from the MSS data stream.

The Landsat format synchronizer driver is implemented in PDP-11 Macro Assembly language. Its detailed design is documented in CPDS, LSD-IGF-CPD-3077.

16.1.2 HARDWARE ENVIRONMENT

Figure 16-2 illustrates the DRRTS hardware components that make up the DRRTS hardware environment. The actual hardware configuration is illustrated in Figure 16-3. The function of each item in the list below will be briefly explained in the following paragraphs:

a. PDP 11/34 with 256 Kbytes of memory

b. Two RK07 disks

c. LA36 terminal (system console)

d. VT100 terminal (operator's console)

e. VT78 terminal (formatted display device)

f. HDDR control

g. 800/1600 BPI MTU

h. Two 14-track HDDRs and four 28-HDDRs

i. Synchronized time code generator (STCG)

j. MSS simulator

k. Analog and digitial matrix switches

l. Line printer

m. Moving window display

n. MSS Demux (LFS).

16.2 OVERVIEW/BACKGROUND

The Landsat-D Ground Segment functions covered in this section of the manual include the HDT-AM uplink and HDT copy functions of the DRRTS system.

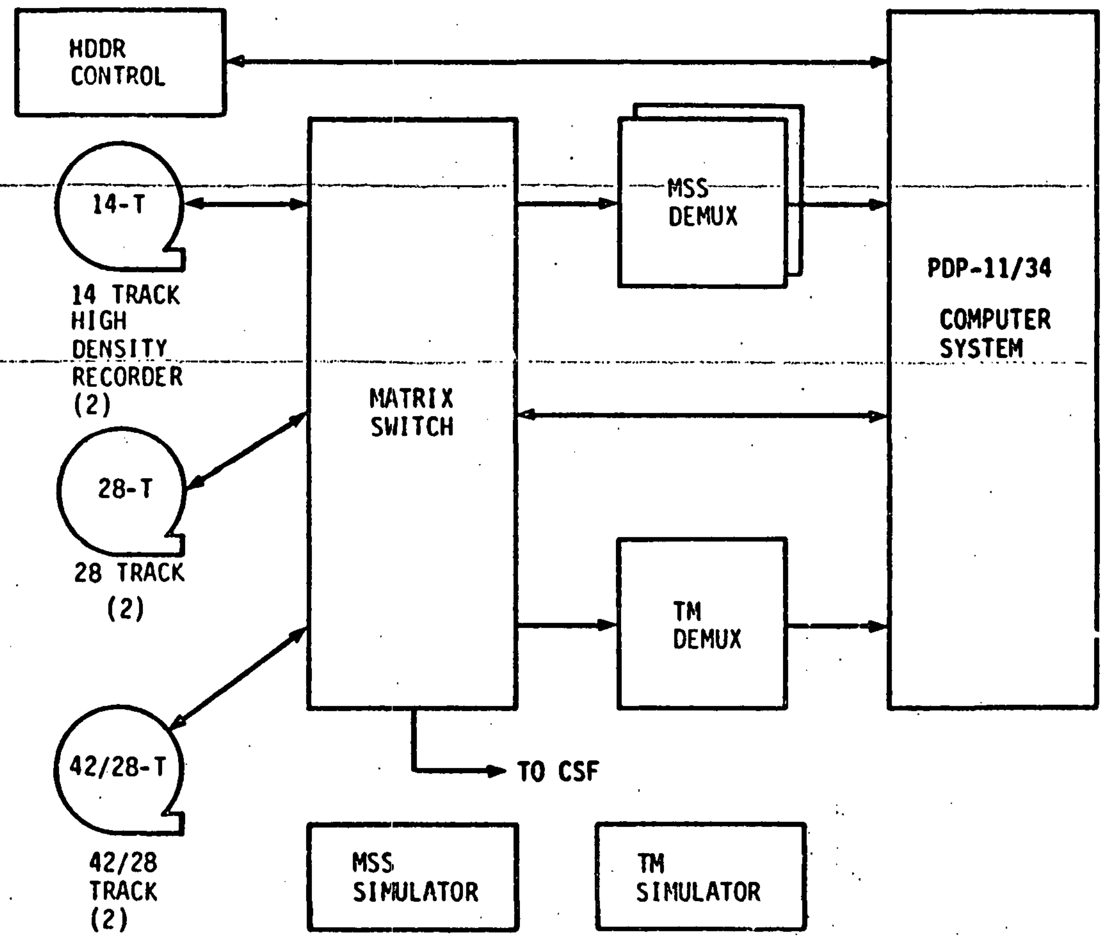

Figure 16-2. DRRTS Hardware Components

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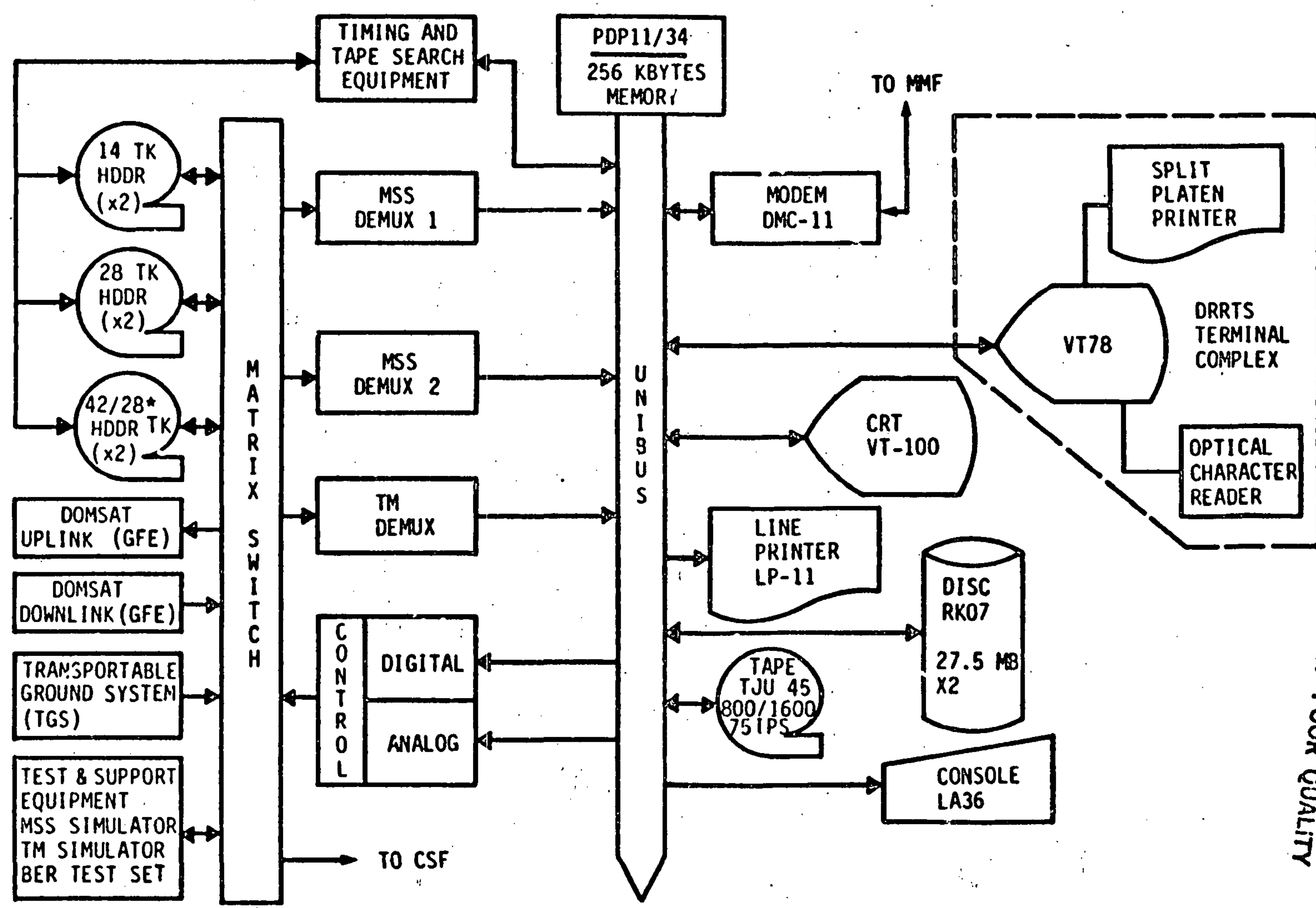

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Figure 16-3. DRRTS Hardware Configuration

16.3 FUNCTION DESCRIPTION

The two functions of the DRRTS system to be discussed here are depicted in Figures 16-4 and 16-5. Additionally, the various DRRTS system functions that support the uplink and copy function are presented as scenarios that the operator may follow.

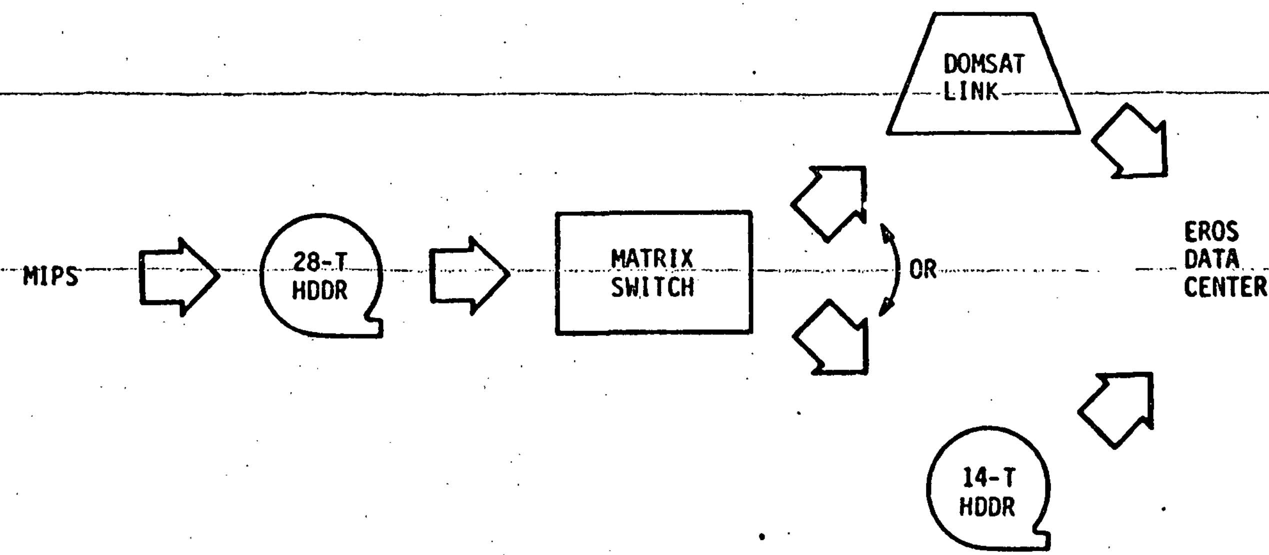

Figure 16-4. DRRTS Data Flows: Data Transmission

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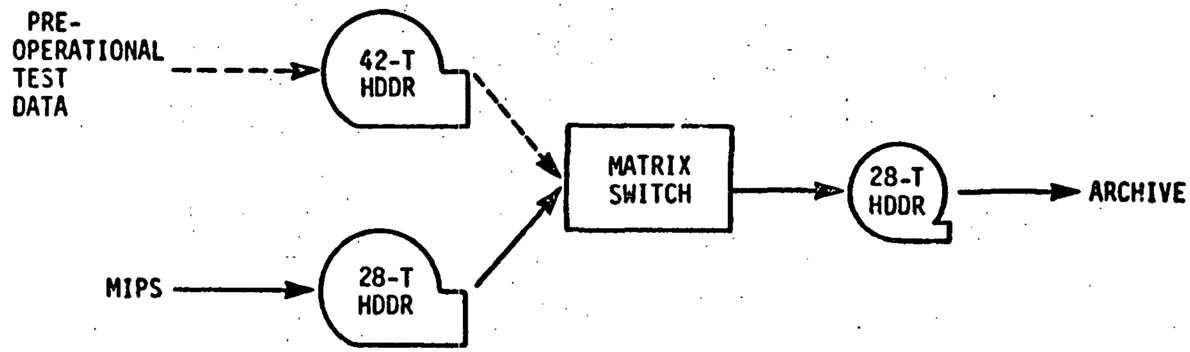

Figure 16-5. DRRTS Data Flows: Tape Copy

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16.4 UPLINK/COPY

16.4.1 OPERATOR INTRODUCTION

Operators should expect to see outputs from the system as depicted in the following examples. There are, however, some exceptions to this:

a. The RSX-11M spooler software is activated when print files are available, so the system may exhibit a delay between the event and the printout.

b. RSX-11M may print additional messages (on the system console) not shown in the following examples. For example, if the printer is offline and a new report is ready for printing, RSX-11M will print a "line printer not ready" message on the system console.

c. DRRTS application software may also display additional messages. For example, if an HDDR hardware problem is detected, an appropriate message would be displayed on the operator's terminal.

All entries in the log file are prefixed by the current date and time. Only the first line of fixed menu selection is included in the log file.

16.4.1.1 System Start-up

ACTION	SYSTEM RESPONSE
AT THE SYSTEM CONSOLE: SIGN INTO THE DRRTS SYSTEM TYPE "HEL DRRTS/PRIV(C/R)"	AT THE SYSTEM CONSOLE: DRRTS WILL RESPOND RSX-11 BL26 MULTI-USER SYSTEM GOOD AFTERNOON 12-NOV-81 13:30 LOGGED ON TERMINAL TT0: ** WELCOME TO DRRTS **

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ACTION	SYSTEM RESPONSE
TYPE "DRRTS(C/R)"	DRRTS WILL RESPOND

```
DRRTS WILL RESPOND
        "ALT PRT.../PRI=107.
         PIP [6,306]*.DAT;*/DE
         PIP [6,307]*.DAT;*/DE
         PIP DRRTSLOC.FIL;*/DE
         PIP OPERATION.FIL;*/DE
         PIP PROCESS.FIL;*/DE
         PIP MDDR.FIL;*/DE
         PIP SEQUENCES.FIL;*/DE
         PIP OPERATION.FIL=OPERATION.SAV
         PIP PROCESS.FIL=PROCESS.SAV
         PIP MDDR.FIL=MDDR.SAV
         PIP SEQUENCES.FIL=SEQUENCES.SAV
         PIP [6,306]OPR001.DAT=[6,306]OPR001.SAV
         PIP [6,306]OPR002.DAT=[6,306]OPR002.SAV
         PIP [6,307]PAD001.DAT=[6,307]PAD001.MAS
         PIP [6,307]IOD001.DAT=[6,307]IOD001.MAS
         PIP [6,307]MRD001.DAT=[6,307]MRD001.MAS
         PIP [6,307]PAD002.DAT=[6,307]PAD002.MAS
         PIP [6,307]PAD003.DAT=[6,307]PAD003.MAS
         REM DIRGEN
         REM MDRCON
         REM OPMON1
         REM OPMON2
         REM MMFSRV
         REM OPRINT
         INS [105,5]DIRGEN/TASK=DIRGEN/PRI=220./UIC=[5,300]/CKP=YES
         INS [105,4]MDRCON/TASK=MDRCON/PRI=104./UIC=[5,300]/CKP=YES
         INS [105,3]OPMON1/TASK=OPMON1/PRI=103./UIC=[5,300]/CKP=YES
         INS [105,3]OPMON2/TASK=OPMON2/PRI=103./UIC=[5,300]/CKP=YES
         INS [105,2]MMFSRV/TASK=MMFSRV/PRI=102./UIC=[5,300]/CKP=YES
         INS [105,1]OPRINT/TASK=OPRINT/PRI=101./UIC=[5,300]/CKP=NO
         RUN DIRGEN
         RUN MDRCON
         RUN OPMON1
         RUN OPMON2
         RUN MMFSRV
         RUN OPRINT"

AT THE OPERATOR TERMINAL:
DRRTS WILL RESPOND
        "DO YOU WISH TO INITIALIZE ALL DEVICES ?  (Y OR N)"
```

ACTION	SYSTEM RESPONSE
AT THE OPERATOR'S TERMINAL TYPE "Y(C/R)"	DRRTS WILL RESPOND

```
DRRTS WILL RESPOND
      "TM DEMUX #1 WARM START FAILED, COLD START REQUIRED
       OPERATOR INTERFACE (TMINIT) - TM DEMUX #1 RESET ERROR, DSW=  -5, IOST=  0
       TM DEMUX #1 FAILED TO INITIALIZE
       TM DEMUX #2 WARM START FAILED, COLD START REQUIRED
       OPERATOR INTERFACE (TMINIT) - TM DEMUX #2 RESET ERROR, DSW=  -5, IOST=  0
       TM DEMUX #2 FAILED TO INITIALIZE
       PLEASE HIT RETURN WHEN THE MATRIX SWITCHES ARE IN STANDBY MODE"
```

TYPE "(C/R)"

```
DRRTS WILL RESPOND
      "DISCONNECT ALL MATRIX SWITCH OUTPUT PORTS ?  (Y OR N)"
```

TYPE "Y(C/R)"

```
DRRTS WILL RESPOND
      "MATRIX SWITCHES INITIALIZED
       DEVICE INITIALIZATION COMPLETE
       SHOULD FILE INITIALIZATION BE PERFORMED ?  (Y OR N)"
```

TYPE "N(C/R)"

```
DRRTS WILL RESPOND
      "PLEASE SELECT FUNCTION
         1.  DEFINE PROCESS
         2.  DELETE PROCESS
         3.  DEFINE OPERATION
         4.  LOAD OPERATION
         5.  CONTROL OPERATION
         6.  CANCEL OPERATION
         7.  DELETE OPERATION
         8.  RELEASE PROCESS TO MMF
         9.  MANUAL OPERATIONS
        10.  STATUS
        11.  ABORT DRRTS
        12.  END OPERATION"
```

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16.4.1.2 Input Error Detection and Recovery

The following examples depict the various key entries performed by the operator in response to system prompts. Scattered throughout this section are various entries made incorrectly to depict the error handling capabilities. The error entries are underlined. Additionally shown are various entries that cause a warning message to prevent name duplication within the system.

```
PLEASE SELECT FUNCTION
  1.  DEFINE PROCESS
  2.  DELETE PROCESS
  3.  DEFINE OPERATION
  4.  LOAD OPERATION
  5.  CONTROL OPERATION
  6.  CANCEL OPERATION
  7.  DELETE OPERATION
  8.  RELEASE PROCESS TO MMF
  9.  MANUAL OPERATIONS
 10.  STATUS
 11.  ABORT DRRTS
 12.  END OPERATION"
```

```
TYPE "13(C/R)"            DRRTS WILL RESPOND
                                "INVALID INPUT
                                 PLEASE SELECT FUNCTION
                                   1.  DEFINE PROCESS
                                   2.  DELETE PROCESS
                                   3.  DEFINE OPERATION
                                   4.  LOAD OPERATION
                                   5.  CONTROL OPERATION
                                   6.  CANCEL OPERATION
                                   7.  DELETE OPERATION
                                   8.  RELEASE PROCESS TO MMF
                                   9.  MANUAL OPERATIONS
                                  10.  STATUS
                                  11.  ABORT DRRTS
                                  12.  END OPERATION"
```

ACTION	SYSTEM RESPONSE
SELECT <DEFINE PROCESS> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK"
SELECT <IMAGE DATA ACQUISITION> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "123456(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "ABCDEFG(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "TEST1(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "TESTA(C/R)"	DRRTS WILL RESPOND "PROCESS NAME (TESTA) ALREADY USED PLEASE ENTER PROCESS NAME (1 TO 6 ALPHABETIC CHARS)"
TYPE "ATEST(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER HDT TAPE LABEL ID (MNSTTTTJJJXX)"
TYPE "L3MHA8100101(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER HDT TAPE LABEL ID (MNSTTTTJJJXX)"
TYPE "L4MHA8136701(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER HDT TAPE LABEL ID (MNSTTTTJJJXX)"
TYPE "(ESC)"	DRRTS WILL RESPOND "FUNCTION 1 ABORTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE ENTER LOGICAL HDT TAPE LABEL ID (MMSSTTTJJJXX)"
TYPE "L4MHAB100102(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "367.12:00:00.0(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "366.24:00:00.0(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
TYPE "366.23:59:59:9(C/R)"	DRRTS WILL RESPOND "INVALID INPUT PLEASE ENTER IRIG START TIME (DDD.HH:MM:SS.S)"
DEPRESS THE "CTRL" AND THE "Z" KEYS TOGETHER	DRRTS WILL RESPOND " ^Z FUNCTION 1 ABORTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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ACTION

SYSTEM RESPONSE

DRRTS WILL RESPOND
"PLEASE SELECT OPERATION TYPE
1. HDT-R GENERATION
2. HDT COPY
3. HDT-AM UPLINK
4. PLAYBACK
5. RETROSPECTIVE DIRECTORY GENERATION
6. SCENE PACKING
7. MSS LINE TEST
8. TM LINE TEST
9. HDT COPY LINE TEST"

LECT <HDT-R GENERATION>
PE "1(C/R)"

DRRTS WILL RESPOND
"NO HDT-R GENERATION OPERATION IS PAUSED
PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO HMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

ELECT <END>
YPE "3(C/R)"

DRRTS WILL RESPOND
"NO HDT-R GENERATION OPERATION IS EXECUTING OR PAUSED
PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO HMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

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ACTION	SYSTEM RESPONSE
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "MOUNT HDT L4NNA8100104 ON THE 20-T 01 HDDR" VERIFY HDDR WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 02(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "WRONG HDDR - USE HDDR 20-T 01 VERIFY HDDR WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-T 01(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4NNA8100102(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "WRONG HDT - USE HDT L4NNA8100104 VERIFY HDT-ID WITH OCR WAND"
AT THE VT78 TERMINAL: USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4NNA8100104(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"

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16.4.1.3 Manual Functions

16.4.1.3.1 Matrix Switch STCG to 14-T HDDR

```
          ACTION                                         SYSTEM RESPONSE

                                          DRRTS WILL RESPOND
                                                "PLEASE SELECT FUNCTION
                                                   1.  DEFINE PROCESS
                                                   2.  DELETE PROCESS
                                                   3.  DEFINE OPERATION
                                                   4.  LOAD OPERATION
                                                   5.  CONTROL OPERATION
                                                   6.  CANCEL OPERATION
                                                   7.  DELETE OPERATION
                                                   8.  RELEASE PROCESS TO PRF
                                                   9.  MANUAL OPERATIONS
                                                  10.  STATUS
                                                  11.  ABORT DRRTS
                                                  12.  END OPERATION"

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                             DRRTS WILL RESPOND
                                                "PLEASE SELECT MANUAL OPERATION
                                                   1.  HDDR
                                                   2.  MATRIX SWITCH
                                                   3.  READ MASTER TIME
                                                   4.  READ RAW TAPE
                                                   5.  WRITE RAW TAPE
                                                   6.  CONFIGURE DRRTS FUNCTIONS
                                                   7.  DEVICE INITIALIZATION"

SELECT <MATRIX SWITCH>
TYPE "2(C/R)"                             DRRTS WILL RESPOND
                                                "PLEASE SELECT MATRIX SWITCH TYPE
                                                   1.  ANALOG
                                                   2.  DIGITAL"

SELECT <ANALOG>
TYPE "1(C/R)"                             DRRTS WILL RESPOND
                                                "PLEASE SELECT MATRIX SWITCH COMMAND
                                                   1.  CONNECT
                                                   2.  DISCONNECT"
SELECT <CONNECT>
TYPE "1(C/R)"                             DRRTS WILL RESPOND
                                                "PLEASE SELECT INPUT PORT NUMBER
                                                   1.  14-T  #1
                                                   2.  14-T  #2
                                                   3.  28-T  #1
                                                   4.  28-T  #2
                                                   5.  28-T  #3
                                                   6.  28-T  #4
                                                   7.    STCG  "

SELECT <STCG>
TYPE "7(C/R)"                             DRRTS WILL RESPOND
                                                "PLEASE SELECT OUTPUT PORT NUMBER
                                                   1.  14-T  #1
                                                   2.  14-T  #2
                                                   3.  28-T  #1
                                                   4.  28-T  #2
                                                   5.  28-T  #3
                                                   6.  28-T  #4
                                                   7.  NON-INIT"

SELECT <28-T  #1>                         ANALOG MATRIX SWITCH WINDOW DISPLAYS WILL SHOW:  OUTPUT  7   INPUT  16
TYPE "3(C/R)"                             DRRTS WILL RESPOND
                                                "INPUT PORT   STCG   NOW CONNECTED TO OUTPUT PORT 28-T  #1
```

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16.4.1.3.2 Matrix Switch 14-T HDDR to MSS Demux to 28T HDDR

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <MATRIX SWITCH> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH TYPE 1. ANALOG 2. DIGITAL"
SELECT <DIGITAL> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH COMMAND 1. CONNECT 2. DISCONNECT"
SELECT <CONNECT> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT INPUT PORT NUMBER 1. 14-T #1 2. 14-T #2 3. MSS-SIML 4. 28-T #1 5. 28-T #2 6. 28-T #3 7. 28-T #4 8. DOM-RECV 9. TGSRCV-M 10. TGSRCV-T 11. BER-RECV 12. TM-SIMUL"

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ACTION	SYSTEM RESPONSE
SELECT <MSS-DIRL> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OUTPUT PORT NUMBER 1. 16-T #1 2. 16-T #2 3. MSS-DMX1 4. MSS-DMX2 5. 20-T #1 6. 20-T #2 7. 20-T #3 8. 20-T #4 9. DOM-IRIT 10. TM-DEMX2 11. DER-IRIT 12. TM-DEMX1"
SELECT <20-T #1> TYPE "5(C/R)"	DIGITAL MATRIX SWITCH WINDOW DISPLAYS WILL SHOW: OUTPUT 7 INPUT 6 DRRTS WILL RESPOND "INPUT PORT MSS-DIRL NOW CONNECTED TO OUTPUT PORT 20-T #1 PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE VT78 TERMINAL: DRRTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 16.4-1 AT THE OPERATOR TERMINAL: DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 16.4-1 WILL BE PRINTED ON THE LINE PRINTER

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DNRTS MATRIX SWITCH STATUS

DATE: 23-NOV-81
TIME: 10:33:55

DIGITAL INPUTS	DIGITAL OUTPUTS	CONNECTIONS		ANALOG INPUTS	ANALOG OUTPUTS	CONNECTIONS
1. 14-T #1	1. 14-T #1	NC	**	1. 14-T #1	1. 14-T #1	NC
2. 14-T #2	2. 14-T #2	NC	**	2. 14-T #2	2. 14-T #2	NC
3.	3.	NC	**	3.	3.	NC
4.	4. NSS-DMX1	NC	**	4.	4.	NC
5.	5. NSS-DMX2	NC	**	5.	5.	NC
6. NSS-SIML	6.	NC	**	6.	6.	NC
7. 28-T #1	7. 28-T #1	NSS-SIML	**	7. 28-T #1	7. 28-T #1	STCG
8. 28-T #2	8. 28-T #2	NC	**	8. 28-T #2	8. 28-T #2	NC
9. 28-T #3	9. 28-T #3	NC	**	9. 28-T #3	9. 28-T #3	NC
10. 28-T #4	10. 28-T #4	NC	**	10. 28-T #4	10. 28-T #4	NC
11.	11.	NC	**	11.	11.	NC
12.	12.	NC	**	12.	12.	NC
13.	13.	NC	**	13.	13.	NC
14.	14.	NC	**	14.	14.	NC
15. DOM-RECV	15. DOM-XMIT	NC	**	15.	15. DOM-XMIT	NC
16. TGSRCV-N	16.	NC	**	16. STCG	16.	NC
17. TGSRCV-T	17. TM-DEMX2	NC	**	17.	17.	NC
18.	18.	NC	**	18.	18.	NC
19. BER-RECV	19. BER-XMIT	NC	**	19.	19.	NC
20. TM-SIMUL	20. TM-DEMX1	NC	**	20.	20.	NC

Figure 16.4-1. Matrix Switch Status Report After Connections

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16.4.1.3.3 Matrix Switch - Disconnect Connected Device

ACTION	SYSTEM RESPONSE
	DPRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DPRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DPRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DPRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <MATRIX SWITCH> TYPE "2(C/R)"	DPRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH TYPE 1. ANALOG 2. DIGITAL"
SELECT <ANALOG> TYPE "1(C/R)"	DPRTS WILL RESPOND "PLEASE SELECT MATRIX SWITCH COMMAND 1. CONNECT 2. DISCONNECT"
SELECT <DISCONNECT> TYPE "2(C/R)"	DPRTS WILL RESPOND "PLEASE SELECT OUTPUT PORT NUMBER 1. 20-T 01"
TYPE "1(C/R)"	ANALOG MATRIX SWITCH WINDOW DISPLAYS WILL SHOW: OUTPUT 7 INPUT 0 DPRTS WILL RESPOND "OUTPUT PORT 20-T 01 SUCCESSFULLY DISCONNECTED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DPRTS 12. END OPERATION"

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ACTION	SYSTEM RESPONSE
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE VTTS TERMINAL: DRRTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 16.4-2 AT THE OPERATOR TERMINAL: DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-6)"
TYPE "1(C/R)"	THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 16.4-2 WILL BE PRINTED ON THE LINE PRINTER

16.4.1.3.4 Read Master Time

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ HMF TAPE 5. WRITE HMF TAPE 6. CONFIGURE DRRTS FUNCTION 7. DEVICE INITIALIZATION"
SELECT <READ MASTER TIME> TYPE "3(C/R)"	DRRTS WILL RESPOND "JULIAN DAY: 170 GMT: 17:31:36.0

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DRRTS MATRIX SWITCH STATUS

DATE: 23-NOV-81
TIME: 10:34:51

DIGITAL INPUTS	DIGITAL OUTPUTS	DIGITAL CONNECTIONS		ANALOG INPUTS	ANALOG OUTPUTS	ANALOG CONNECTIONS
1. 14-T 01	1. 14-T 01	NC	**	1. 14-T 01	1. 14-T 01	NC
2. 14-T 02	2. 14-T 02	NC	**	2. 14-T 02	2. 14-T 02	NC
3.	3.	NC	**	3.	3.	NC
4.	4. MSS-DMX1	NC	**	4.	4.	NC
5.	5. MSS-DMX2	NC	**	5.	5.	NC
6. MSS-SIML	6.	NC	**	6.	6.	NC
7. 28-T 01	7. 28-T 01	NC	**	7. 28-T 01	7. 28-T 01	NC
8. 28-T 02	8. 28-T 02	NC	**	8. 28-T 02	8. 28-T 02	NC
9. 28-T 03	9. 28-T 03	NC	**	9. 28-T 03	9. 28-T 03	NC
10. 28-T 04	10. 28-T 04	NC	**	10. 28-T 04	10. 28-T 04	NC
11.	11.	NC	**	11.	11.	NC
12.	12.	NC	**	12.	12.	NC
13.	13.	NC	**	13.	13.	NC
14.	14.	NC	**	14.	14.	NC
15. DOR-RECV	15. DOR-XMIT	NC	**	15.	15. DOR-XMIT	NC
16. TGSRCV-N	16.	NC	**	16. STCG	16.	NC
17. TGSRCV-T	17. TM-DEMX2	NC	**	17.	17.	NC
18.	18.	NC	**	18.	18.	NC
19. BER-RECV	19. BER-XMIT	NC	**	19.	19.	NC
20. TM-SIMUL	20. TM-DEMX1	NC	**	20.	20.	NC

Figure 16.4-2. Matrix Switch Status Report After Disconnections

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16.4.1.3.5 System Functional Configuration

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTION 7. DEVICE INITIALIZATION"
SELECT <CONFIGURE DRRTS FUNCTIONS> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DRRTS FUNCTION 1. OPERATOR TERMINAL 2. FORMATTED DISPLAYS 3. REPORTS 4. MMF INTERFACE"
SELECT <OPERATOR TERMINAL> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATOR TERMINAL ASSIGNMENT 1. VT100 2. VT78"
SELECT <VT78> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL: DRRTS WILL RESPOND "ASSIGNMENT SUCCESSFULLY MADE" AT THE VT78 TERMINAL: DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
Select ⟨Manual Operations⟩ Type "9(C/R)"	

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AT THE VT78 TERMINAL:
SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT MANUAL OPERATION
1. HDDR
2. MATRIX SWITCH
3. READ MASTER TIME
4. READ MMF TAPE
5. WRITE MMF TAPE
6. CONFIGURE DRRTS FUNCTIONS
7. DEVICE INITIALIZATION"

SELECT <CONFIGURE DRRTS FUNCTIONS>
TYPE "6(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT DRRTS FUNCTION
1. OPERATOR TERMINAL
2. FORMATTED DISPLAYS
3. REPORTS
4. MMF INTERFACE"

SELECT <OPERATOR TERMINAL>
TYPE "1(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT OPERATOR TERMINAL ASSIGNMENT
1. VT100
2. VT78"

SELECT <VT100>
TYPE "1(C/R)"

AT THE OPERATOR TERMINAL AND THE VT78 TERMINAL
DRRTS WILL RESPOND
"ASSIGNMENT SUCCESSFULLY MADE"

AT THE OPERATOR TERMINAL:
DRRTS WILL RESPOND
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO MMF
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

AT THE OPERATOR TERMINAL:
SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT MANUAL OPERATION
1. HDDR
2. MATRIX SWITCH
3. READ MASTER TIME
4. READ MMF TAPE
5. WRITE MMF TAPE
6. CONFIGURE DRRTS FUNCTIONS
7. DEVICE INITIALIZATION"

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```
ACTION                                   SYSTEM RESPONSE

SELECT <CONFIGURE DARTS FUNCTIONS>
TYPE "6(C/R)"                            DARTS WILL RESPOND
                                             "PLEASE SELECT DARTS FUNCTION
                                                1.  OPERATOR TERMINAL
                                                2.  FORMATTED DISPLAYS
                                                3.  REPORTS
                                                4.  MMF INTERFACE"

SELECT <FORMATTED DISPLAYS>
TYPE "2(C/R)"                            DARTS WILL RESPOND
                                             "PLEASE SELECT FORMATTED DISPLAY ASSIGNMENT
                                                 1.  VT78
                                                 2.  VT100"

SELECT <VT100>
TYPE "2(C/R)"                            DARTS WILL RESPOND
                                             "ASSIGNMENT SUCCESSFULLY MADE

                                         DARTS WILL RESPOND
                                             "PLEASE SELECT FUNCTION
                                                 1.  DEFINE PROCESS
                                                 2.  DELETE PROCESS
                                                 3.  DEFINE OPERATION
                                                 4.  LOAD OPERATION
                                                 5.  CONTROL OPERATION
                                                 6.  CANCEL OPERATION
                                                 7.  DELETE OPERATION
                                                 8.  RELEASE PROCESS TO MMF
                                                 9.  MANUAL OPERATIONS
                                                10.  STATUS
                                                11.  ABORT DARTS
                                                12.  END OPERATION"

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                            DARTS WILL RESPOND
                                             "PLEASE SELECT MANUAL OPERATION
                                                1.  NDDN
                                                2.  MATRIX SWITCH
                                                3.  READ MASTER TIME
                                                4.  READ MMF TAPE
                                                5.  WRITE MMF TAPE
                                                6.  CONFIGURE DARTS FUNCTIONS
                                                7.  DEVICE INITIALIZATION"

SELECT <CONFIGURE DARTS FUNCTIONS>
TYPE "6(C/R)"                            DARTS WILL RESPOND
                                             "PLEASE SELECT DARTS FUNCTION
                                                1.  OPERATOR TERMINAL
                                                2.  FORMATTED DISPLAYS
                                                3.  REPORTS
                                                4.  MMF INTERFACE"

SELECT <REPORTS>
TYPE "3(C/R)"                            DARTS WILL RESPOND
                                             "PLEASE SELECT REPORTS ASSIGNMENT
                                                 1.  LINE PRINTER
                                                 2.  SYSTEM CONSOLE"

SELECT <SYSTEM CONSOLE>
TYPE "2(C/R)"                            DARTS WILL RESPOND
                                             "ASSIGNMENT SUCCESSFULLY MADE
```

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATION> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <CONFIGURE DRRTS FUNCTIONS> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DRRTS FUNCTION 1. OPERATOR TERMINAL 2. FORMATTED DISPLAYS 3. REPORTS 4. MMF INTERFACE"
SELECT <FORMATTED DISPLAYS> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FORMATTED DISPLAY ASSIGNMENT 1. VT78 2. VT100"
SELECT <VT78> TYPE "1(C/R)"	DRRTS WILL RESPOND "ASSIGNMENT SUCCESSFULLY MADE

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ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. HL[illegible] 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ [illegible] TAPE 5. WRITE [illegible] TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <CONFIGURE DRRTS FUNCTIONS> TYPE "6(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DRRTS FUNCTION 1. OPERATOR TERMINAL 2. FORMATTED DISPLAYS 3. REPORTS 4. MMF INTERFACE"
SELECT <REPORTS> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT REPORTS ASSIGNMENT 1. LINE PRINTER 2. SYSTEM CONSOLE"
SELECT <LINE PRINTER> TYPE "1(C/R)"	DRRTS WILL RESPOND "ASSIGNMENT SUCECSFULLY MADE

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16.4.1.3.6 Status Displays

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MRF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT MATRIX SWITCH STATUS	
TYPE "1(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE HDDR STATUS REPORT SHOWN IN FIGURE 16.4-3
TYPE "1(C/R)"	THE HDDR REPORT SHOWN IN FIGURE 16.4-3 WILL BE PRINTED ON THE LINE PRINTER

```
                          ERRIS HDDR STATUS               DATE: 14-MAY-87
                                                          TIME: 10:12:02

                                    LAST 1 MINUTE    CURRENT TOTAL    THRESHOLDS
                                    CE       UE      CE       UE      CE     UE
  HDDR    STATE  REEL LABEL TO RELEASE
  14-T    #1 OFFLINE
  14-1    #2 OFFLINE
  28-1    #1 OFFLINE
  28-T    #2 OFFLINE
  28-1    #3 OFFLINE
  28-T    #4 OFFLINE
```

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Figure 16.4-3. HDDR Status Report

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DDRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DDRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DDRTS WILL DISPLAY THE MATRIX SWITCH STATUS REPORT SHOWN IN FIGURE 16.4-4 DDRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE MATRIX SWITCH REPORT SHOWN IN FIGURE 16.4-4 WILL BE PRINTED ON THE LINE PRINTER

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DMRTS MATRIX SWITCH STATUS

DATE: 23-NOV-81
TIME: 10:33:55

DIGITAL INPUTS	DIGITAL OUTPUTS	DIGITAL CONNECTIONS	ANALOG INPUTS	ANALOG OUTPUTS	ANALOG CONNECTIONS
1. 14-T #1	1. 14-T #1	NC	1. 14-T #1	1. 14-T #1	NC
2. 14-T #2	2. 14-T #2	NC	2. 14-T #2	2. 14-T #2	NC
3.	3.	NC	3.	3.	NC
4.	4. NSS-DNX1	NC	4.	4.	NC
5.	5. NSS-DNX2	NC	5.	5.	NC
6. NSS-SIML	6.	NC	6.	6.	NC
7. 20-T #1	7. 20-T #1	NSS-SIML	7. 20-T #1	7. 20-T #1	STCG
8. 20-T #2	8. 20-T #2	NC	8. 20-T #2	8. 20-T #2	NC
9. 20-T #3	9. 20-T #3	NC	9. 20-T #3	9. 20-T #3	NC
10. 20-T #4	10. 20-T #4	NC	10. 20-T #4	10. 20-T #4	NC
11.	11.	NC	11.	11.	NC
12.	12.	NC	12.	12.	NC
13.	13.	NC	13.	13.	NC
14.	14.	NC	14.	14.	NC
15. DOM-RECV	15. DOM-XMIT	NC	15.	15. DOM-XMIT	NC
16. TCSRCV-R	16.	NC	16. STCG	16.	NC
17. TCSRCV-T	17. TR-DEMX2	NC	17.	17.	NC
18.	18.	NC	18.	18.	NC
19. BER-RECV	19. BER-XMIT	NC	19.	19.	NC
20. TR-SIMUL	20. TR-DEMX1	NC	20.	20.	NC

Figure 16.4-4. Matrix Switch Status Report

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RKT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "3(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE IMAGE DATA ACQUISITION STATUS REPORT SHOWN IN FIGURE 16.4-5 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION REPORT SHOWN IN FIGURE 16.4-5 WILL BE PRINTED ON THE LINE PRINTER

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IMAGE DATA ACQUISITION STATUS REPORT

DATE: 21-JAN-82
TIME: 03:34:19

PROCESS REQUEST	M-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR	COMPLETION DATE	TIME
1. TGSACH	READY	READY	NOT DEF	L4MHR0202102	28-T #1		
2. DHCVSA	READY	READY	NOT DEF	L4MHR8202103	28-T #2		
3. DHCVDA	READY	READY	NOT DEF	L4MHR8202104	28-T #1		
4. GSTUHN	READY	READY	NOT DEF	L4MHR8202105	28-T #1		

TOTAL NUMBER OF PROCESS REQUESTS: 4

Figure 16.4-5. Image Lata Acquisition Status Report

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ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HRT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "5(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE HDT-AM UPLINK TABLE REPORT SHOWN IN FIGURE 16.4-6 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-6 WILL BE PRINTED ON THE LINE PRINTER

HDT-AM UPLINK OPERATION REPORT

DATE: 21-JAN-82
TIME: 05:03:49
COMPLETION DATE: 21-JAN-82
COMPLETION TIME: 05:02:44

DT-AM ID: L4MHAB130303 HDDR: 20-T 01 UE: 15 CE: 24829

OGICAL TAPE	START TIME	STOP TIME	UNCORRECTED ERRORS	CORRECTED ERRORS	RETRIES
1	303.15:30:00.0	303.15:32:00.0	6	6885	0
2	303.15:32:00.0	303.15:35:00.0	15	24829	1

ND OF REPORT

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Figure 16.4-6. HDT-AM Uplink Status

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. MODE STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "7(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE OPERATION DEFINITION TABLE STATUS REPORT SHOWN IN FIGURE 16.4-7 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE OPERATION DEFINITION STATUS REPORT SHOWN IN FIGURE 16.4-7 WILL BE PRINTED ON THE LINE PRINTER

```
                         OPERATION DEFINITION REPORT            DATE: 21-JAN-82
                                                                TIME: 02:17:11
OPERATION NAME: GSCOPY
OPERATION TYPE: HDT COPY
PROCESS NAME: DPR001
DATA SOURCE: HDT
                          INPUT                  OUTPUT

MATRIX SWITCH:           28-T 01                29-T 02
CORRECTED THRESHOLD:      1000                   1000
UNCORRECTED THRESHOLD:     10                     10
HDT-ID:                 L4HHA8130303           L4HHA8201501

              DATA RATES
RECORDED:     AN RATE                    INSTRUMENT TYPE: MSS
PLAYBACK:     1 X MSS                    DEMUX:           N/A
RECORDING:    1 X MSS                    DIRECTORY:       NO
```

Figure 16.4-7. Operation Definition Table Status Report

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16.4.1.3.7 Device Initialization

ACTION	SYSTEM RESPONSE
	PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ RMF TAPE 5. WRITE RMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <DEVICE INITIALIZATION> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT DEVICE(S) TO INITIALIZE 1. MATRIX SWITCHES 2. TM DEMUX #1 3. TM DEMUX #2 4. ALL OF THE ABOVE"
SELECT <MATRIX SWITCHES> TYPE "1(C/R)"	DRRTS WILL RESPOND "PLEASE HIT RETURN WHEN MATRIX SWITCHES ARE IN STANDBY MODE"
PUT MATRIX SWITCHES IN STANDBY TYPE "(C/R)"	DRRTS WILL RESPOND "DISCONNECT ALL OUTPUT PORTS ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL RESPOND "MATRIX SWITCHES INITIALIZED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <MANUAL OPERATIONS> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MDDR 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ RMF TAPE 5. WRITE RMF TAPE 6. CONFIGURE DRRTS FUNCTIONS 7. DEVICE INITIALIZATION"

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```
SELECT <DEVICE INITIALIZATION>
TYPE "7(C/R)"                      DRRTS WILL RESPOND
                                          "PLEASE SELECT DEVICE(S) TO INITIALIZE
                                              1.  MATRIX SWITCHES
                                              2.  TM DEMUX 01
                                              3.  TM DEMUX 02
                                              4.  ALL OF THE ABOVE"


SELECT <ALL OF THE ABOVE>
TYPE "4(C/R)"                      DRRTS WILL RESPOND
                                          "PLEASE HIT RETURN WHEN MATRIX SWITCHES ARE IN STANDBY MODE"


TYPE "(C/R)"                       DRRTS WILL RESPOND
                                          "DISCONNECT ALL MATRIX SWITCH OUTPUT PORTS ?  (Y OR N)"


      Y(C/R)"                      DRRTS WILL RESPOND
                                          "MATRIX SWITCHES INITIALIZED
                                           TM DEMUX 01 WARM START FAILED, COLD START REQUIRED
                                           OPERATOR INTERFACE (ATMIN1) - TM DEMUX 01 RESET ERROR, DSW= -5,  IOST= 0
                                           TM DEMUX 01 FAILED TO INITIALIZE
                                           TM DEMUX 02 WARM START FAILED, COLD START REQUIRED
                                           OPERATOR INTERFACE (ATMIN1) - TM DEMUX 02 RESET ERROR, DSW= -5,  IOST= 0
                                           TM DEMUX 02 FAILED TO INITIALIZE
                                           PLEASE SELECT FUNCTION
                                              1.  DEFINE PROCESS
                                              2.  DELETE PROCESS
                                              3.  DEFINE OPERATION
                                              4.  LOAD OPERATION
                                              5.  CONTROL OPERATION
                                              6.  CANCEL OPERATION
                                              7.  DELETE OPERATION
                                              8.  RELEASE PROCESS TO RMF
                                              9.  MANUAL OPERATIONS
                                             10.  STATUS
                                             11.  ABORT DRRTS
                                             12.  END OPERATION"
```

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16.4.1.4 Line Test Operations

The following paragraphs depict how the operator may test the system for operational readiness.

16.4.1.4.1 MSS Line Test

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DARTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "6(C/R)"	DARTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <MSS LINE TEST> TYPE "7(C/R)"	DARTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTML"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL DARTS WILL RESPOND "MOUNT HDT L4HNR8100110 ON THE 28-T 01 HDDR" "VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T 01(C/R)"	DARTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4HNR8100110(C/R)"	ON THE OPERATOR'S TERMINAL DARTS WIL RESPOND "PLEASE SELECT OUTPUT FILE DISPOSITION 1. CREATE NEW MASTER FILES 2. COMPARE WITH PREVIOUSLY CREATED MASTER FILES

ACTION	SYSTEM RESPONSE
ON THE OPERATOR'S TERMINAL SELECT <COMPARE> TYPE "2(C/R)"	DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED" "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTML, STARTED" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTML, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <MSS LINE TEST> TYPE "7(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTML"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4MMR8100110 FROM THE 28-T #1 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "28-T 01(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "L4HR0100110(C/R)"

ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND
"MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED
DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"

ON THE OPERATOR'S TERMINAL, TYPE "Y(C/R)"

DRRTS WILL PRINT THE FOLLOWING REPORTS:
- MSS LINE TEST REPORT (FIGURE 16.4-8)
- IMAGE QUALITY DATA FILE DUMP (FIGURE 16.4-9)
- DIRECTORY FILE DUMP (FIGURE 16.4-10)
- HDT QUALITY FILE DUMP (FIGURE 16.4-11)

DRRTS WILL RESPOND
"ARE THE RESULTS ACCEPTABLE ?
(Y OR N)"

```
                         MSS LINE TEST REPORT                   DATE: 23-NOV-81
                                                                TIME: 12:30:56
                                                     COMPLETION DATE: 23-NOV-81
                                                     COMPLETION TIME: 12:30:18

MODE OF RECEIPT: SIMULATOR MISSION: LS-4  INSTRUMENT: MSS
MDT-R ID: L4MMR8100110     MDDR: 28-T  01 UZ:     14        CE:  1840

INTERVAL                 MASTER                              TEST
               IRIG              SPACECRAFT          IRIG             SPACECRAFT

  1  START  327.15:57:13.9  226.06:34:51.0  327.17:25:49.3  264.10:59:00.4
     STOP   327.16:06:21.4  226.06:43:59.6  327.17:26:56.4  264.14:59:40.8

INTERVALS DO NOT MATCH BEYOND THIS POINT

TOTAL DIFFERENCES:    4
```

Figure 16.4-8. MSS Line Test Report

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IMAGE QUALITY DATA

DATE: 23-NOV-81
TIME: 12:31:02

INPUT HDT:
OUTPUT HDT: L4HHR8100110

INTERVAL	SPACECRAFT TIME	SUBSTITUTED FOR SPACECRAFT TIME	MAJOR FRAME SYNC LOSS	MINOR FRAME SYNC FAULT	MINOR FRAME SYNC LOSS
1	01264145900410	N	N	Y	Y
	01264145900500	N	N	Y	Y
	01264145900770	N	N	Y	Y
	01264145900860	N	N	Y	Y

Figure 16.4-9. Image Quality Data for MSS Line Test

```
                              DIRECTORY FILE                    DATE: 23-NOV-81
                                                                TIME: 12:31:03

HDT: L4NNR8100110  MODE: M-3  DATA RATE: 15063  DATA SOURCE: SIM

ASSOCIATED FILE NAMES:
     PA0001
     ID0001

INTERVAL              SPACECRAFT                         IRIG TIME
          START TIME         STOP TIME         START TIME       STOP TIME

   1.    81264145900410 81264145948830    3271725493       3271726564

NO. OF INTERVALS:  1
```

Figure 16.4-10. Directory File Dump for MSS Line Test

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:31:03

HDT: L4HHR8100110 HDDR: H-3 DATA RATE: 15063 DATA SOURCE: SIM PROCESS: DATACO

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3271725501	0	0
3271725557	462	14
3271726013	0	0
3271726068	1	0
3271726122	2	0
3271726177	3	0
3271726232	0	0
3271726287	2	0
2930313524	1365	0
3271726401	0	0
3271726456	5	0

Figure 16.4-11. HDT Quality Data for MSS Line Test

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16.4.1.4.2 HDT Copy Test

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <COPY LINE TEST> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTCL"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L4MMA8100110 ON THE 28-T #2 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "28-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

ACTION	SYSTEM RESPONSE
USE THE OCR WAND TO READ THE HDT ID FROM THE HDDR OR TYPE "L4MHA8100110(C/R)"	DRRTS WILL RESPOND "MOUNT HDT L4MHA8100111 ON THE 14-T 02 HDDR" "VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "14-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "L4MHR8100111(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "PLEASE SELECT OUTPUT FILE DISPOSITION 1. CREATE NEW MASTER FILES 2. COMPARE WITH PREVIOUSLY CREATED MASTER FILES"
ON THE OPERATOR'S TERMINAL SELECT <COMPARE> TYPE "2(C/R)"	DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTCL, STARTED" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTCL, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AK UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <COPY LINE TEST> TYPE "9(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTCL"

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DISMOUNT HDT L4MHA8100110 FROM THE 28-T 02 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "28-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDDR OR TYPE "L4MHA8100110(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4MHA8100111 FROM THE 14-T 02 HDDR" "VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "14-T 02(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR OR TYPE "L4MHA8100111(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"
TYPE "Y(C/R)"	DRRTS WILL PRINT THE COPY LINE TEST REPORT SHOWN IN FIGURE 16.4-12 AND THE HDT QUALITY FILES SHOWN IN FIGURES 16.4-13 AND 16.4-14 ON THE LINE PRINTER THEN DRRTS WILL RESPOND "ARE THE RESULTS ACCEPTABLE ? (Y OR N)"
TYPE "Y(C/R)"	

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COPY LINE TEST

DATE: 23-NOV-81
TIME: 12:35:22
COMPLETION DATE: 23-NOV-81
COMPLETION TIME: 12:34:17

MASTER HDT-ID: L4MHA8100110 HDDR: 28-T 02
COPY HDT-ID: L4MHA8100111 HDDR: 14-T 02

	MASTER			TEST	
	CORRECTED	UNCORRECTED		CORRECTED	UNCORRECTED
1	0	0	1	0	0
2	0	0	2	7	0
3	0	0	3	430	0
4	0	0	4	189	0
5	0	0	5	0	0
6	113	0	6	0	0
7	0	0	7	0	0
8	0	0	8	323	0
9	0	0	9	[illegible]	0
10	0	0	10	7	0
11	16	0	11	2	0
TOTAL	129	0		958	0

Figure 16.4-12. Copy Line Test Report

HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:35:28

HDT: L4HHA8100110 HDDR: H-4 DATA RATE: 15063 DATA SOURCE: HDT PROCESS: HDTCOP

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
2622036057	0	0
2622036392	7	0
2622037110	430	0
2622037423	189	0
2622038138	0	0
2622038452	0	0
2622039167	0	0
2622039480	323	0
2622040194	0	0
2622040541	7	0
2622041255	2	0

Figure 16.4-13. HDT Quality for Master File for Copy Line Test

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:35:29

HDT: L4NNAB100111 HDDR: H-2 DATA RATE: 15063 DATA SOURCE: HDT PROCESS: HDTCOP

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
2622036059	0	0
2622036393	0	0
2622037111	0	0
2622037425	0	0
2622038139	0	0
2622038453	0	0
2622039168	0	0
2622039481	0	0
2622040209	0	0
2622040542	0	0
2622041256	0	0

Figure 16.4-14. HDT Quality for Copy File for Copy Line Test

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ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE HDT COPY STATUS REPORT SHOWN IN FIGURE 16.4-15
	DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDT COPY STATUS REPORT SHOWN IN FIGURE 16.4-15 WILL BE PRINTED ON THE LINE PRINTER

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```
                      HDT COPY PRODUCTION STATUS          DATE: 23-NOV-81
                                                          TIME: 12:47:41

PROCESS                   MASTER      MASTER    COPY   LOG  TAPES    COMPLETION
REQUEST  STATUS      HDT LABEL ID      HDDR     HDDR   TO DO/COMP  DATE      TIME

1.DPR005 INACTIVE  L4MHA8100503                          1/0

TOTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-15. HDT Copy Production Status after Read Tape

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO ORT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <MATRIX SWITCH STATUS> TYPE "2(C/R)"	AT THE OPERATOR TERMINAL: DRRTS WILL DISPLAY THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-16 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-16 WILL BE PRINTED ON THE LINE PRINTER

HDT-AM UPLINK PRODUCTION STATUS

DATE: 23-NOV-81
TIME: 12:40:50

PROCESS REQUEST	STATUS	HDT LABEL ID	HDDR	LOGICAL TAPES TO DU/COMPLETE	COMPLETION DATE	COMPLETION TIME
1. DPR002	INACTIVE	L4MHA8100502		1/0		
2. DPR003	INACTIVE	L4MHA8100501		1/0		
3. DPR004	INACTIVE	L4MHA8100503		1/0		

TOTAL NUMBER OF PROCESS REQUESTS: 3

Figure 16.4-16.. HDT-AM Uplink after Read Tape

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ACTION	SYSTEM RESPONSE
SELECT <STATUS> ON THE OPERATOR'S TERMINAL, TYPE "10(C/R)".	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT COPY STATUS> TYPE "4(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT SHOWN IN FIGURE 16.4-15 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT-AM UPLINK STATUS> TYPE "5(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-16 WILL BE DISPLAYED ON THE VT-78 THEN, DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDT-AM UPLINK STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER. THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <ABORT DRRTS> TYPE "11(C/R)"	DRRTS WILL RESPOND "PLEASE ENTER INFORMATIONAL TEXT, OR <CR> TO PROCEED WITH THE ABORT"
TYPE "(C/R)"	DRRTS WILL RESPOND "DRRTS ABORTED !!!"
ON THE SYSTEM CONSOLE, TYPE "PIP DRRTSLOG.FIL/SP(C/R)"	THE DRRTS LOG WILL BE PRINTED ON THE LINE PRINTER

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16.4.1.4.3 MMF Services Functions

The functions of DRRTS - namely image data acquisition and uplink/copy - are controlled by process requests received from MMF. The reciprocal of this sequence is the informing of MMF by DRRTS of processes complete, or the release of a process to MMF. The following scenarios will show the operator the various prompts and responses of communication by DRRTS to MMF.

ACTION	SYSTEM RESPONSE
	"PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DKRTS 12. END OPERATION"
SELECT <RELEASE PROCESS> TYPE "8(C/R)"	DKRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK
SELECT <IMAGE DATA ACQUISITION> TYPE "1(C/R)"	DKRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTA L4HHR0100101"
TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED	DKRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DKRTS 12. END OPERATION" WHEN THE PROCESS HAS BEEN RELEASED, DKRTS WILL RESPOND "MMF SERVICE - PROCESS TESTA RELEASED TO MMF"
SELECT <STATUS> TYPE "10(C/R)"	DKRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <IDA STATUS> TYPE "3(C/R)"	THE IMAGE DATA ACQUISITION REPORT SHOWN IN FIGURE 16.4-17 WILL BE DISPLAYED ON THE VT-78, THEN DKRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

IMAGE DATA ACQUISITION STATUS REPORT

DATE: 23-NOV-81
TIME: 12:36:45

PROCESS REQUEST	R-TAPE STATUS	DIR GEN STATUS	PACKING STATUS	HDT-R LABEL	HDDR	COMPLETION DATE	COMPLETION TIME
1. TESTB	NOT DEF	NOT DEF	NOT DEF	L4MHR8100102			
2. TESTC	NOT DEF	NOT DEF	NOT DEF	L4MHR8100103			
3. TESTD	NOT DEF	NOT DEF	NOT DEF	L4MHR8100104			
4. TESTE	NOT DEF	NOT DEF	NOT DEF	L4MHR8100105			
5. TESTF	NOT DEF	NOT DEF	NOT DEF	L4MHR8100106			
6. TESTG	NOT DEF	NOT DEF	NOT DEF	L4MHR8100107			
7. TESTH	NOT DEF	NOT DEF	NOT DEF	L4MHR8100108			
8. TESTI	NOT DEF	NOT DEF	NOT DEF	L4MHR8100109			
9. ATEST	NOT DEF	NOT DEF	NOT DEF	L4MHA8136601			

TOTAL NUMBER OF PROCESS REQUESTS: 9

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Figure 16.4 -17. Image Data Acquisition Status Report After Process Has Been Released

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TYPE "1(C/R)"	THE IMAGE DATA ACQUISITION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <RELEASE PROCESS> TYPE "8(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK
SELECT <HDT COPY> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTCP L4MMA9100101"
TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO RMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE PROCESS HAS BEEN RELEASED TO RMF, DRRTS WILL RESPOND "RMF SERVICE - PROCESS TESTCP RELEASED TO RMF"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. RDDN STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT HDT COPY STATUS TYPE "4(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT SHOWN IN FIGURE 16.4-18 WILL BE DISPLAYED ON THE VT-78 THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

```
                              HDT COPY PRODUCTION STATUS              DATE: 23-NOV-81
                                                                      TIME: 12:37:40

PROCESS                  MASTER       MASTER      COPY      LOG  TAPES    COMPLETING
REQUEST   STATUS     HDT LABEL ID      HDDR       HDDR     TO DO/CUMP   DATE       TIME

TOTAL NUMBER OF PROCESS REQUESTS:  0
```

Figure 16.4-18. HDT Copy Production Status After Process Has Been Released

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <RELEASE PROCESS> TYPE "8(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS TYPE 1. IMAGE DATA ACQUISITION 2. HDT COPY 3. HDT-AM UPLINK
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT PROCESS 1. TESTUP L4NNA8100106"
TYPE "1(C/R)" AND WAIT FOR THE PROCESS TO BE RELEASED	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE PROCESS HAS BEEN RELEASED TO MMT, DRRTS WILL RESPOND "MMT SERVICE = PROCESS TESTUP RELEASED TO MMT"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDM STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT HDT-AM UPLINK STATUS TYPE "5(C/R)"	THE HDT COPY PRODUCTION STATUS REPORT SHOWN IN FIGURE 16.4-19 WILL BE DISPLAYED ON THE VT-78. THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

```
                    HDT-AM UPLINK PRODUCTION STATUS          DATE: 23-NOV-81
                                                             TIME: 12:39:09

PROCESS                                      LOGICAL  TAPES      COMPLETION
REQUEST   STATUS    HDT LABEL ID    HDDR     TO.DU/COMPLETE   DATE       TIME

TOTAL NUMBER OF PROCESS REQUESTS:  0
```

Figure 16.4-19. HDT-AM Uplink Production Status After Process Has Been Released

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ACTION	SYSTEM RESPONSE

```
TYPE "1(C/R)"                   DRRTS WILL RESPOND
                                   "PLEASE SELECT FUNCTION
                                     1.  DEFINE PROCESS
                                     2.  DELETE PROCESS
                                     3.  DEFINE OPERATION
                                     4.  LOAD OPERATION
                                     5.  CONTROL OPERATION
                                     6.  CANCEL OPERATION
                                     7.  DELETE OPERATION
                                     8.  RELEASE PROCESS TO RMF
                                     9.  MANUAL OPERATIONS
                                    10.  STATUS
                                    11.  ABORT DRRTS
                                    12.  END OPERATION"
      .
      .
      .
      .

SELECT <MANUAL OPERATIONS>
TYPE "9(C/R)"                   DRRTS WILL RESPOND
                                   "PLEASE SELECT MANUAL OPERATION
                                     1.  MDUR
                                     2.  MATRIX SWITCH
                                     3.  READ MASTER TIME
                                     4.  READ RMF TAPE
                                     5.  WRITE RMF TAPE
                                     6.  CONFIGURE DRRTS FUNCTIONS
                                     7.  DEVICE INITIALIZATION"

SELECT <WRITE RMF TAPE>
TYPE "5(C/R)"              DRRTS WILL RESPOND
                              "AT THE SYSTEM CONSOLE, TYPE "@WRITETAPE (C/R)" AND ANSWER ALL QUESTION
                               THEN RETURN TO THE OPERATOR TERMINAL AND HIT THE RETURN KEY"

MOUNT A SCRATCH TAPE ON    ON THE SYSTEM CONSOLE, DRRTS WILL RESPOND
THE PDP 11/34 TAPE DRIVE      ">DMO MM0:
ON THE SYSTEM CONSOLE          DMO -- VOLUME NOT MOUNTED DT TI:
TYPE "@WRITETAPE(C/R)"         >DEA MM0:
                               >;
                               >;  MOUNT A BLANK TAPE WITH ITS WRITE PROTECT RING, AND THEN HIT RETUR
                               >;
                               >* [S]:"

TYPE "(C/R)"               DRRTS WILL RESPOND
                              ">* PLEASE INPUT TAPE LABEL [S]:"

TYPE "DECNET(C/R)"         DRRTS WILL RESPOND
                              ">ALL MM0:
                               >INI MM0:DECNET/DENS=1600
                               >MOU MM0:DECNET/DENS=1600/VI
                               MOUNT -- VOLUME INFORMATION --
                               CLASS      = FILES 11
                               DEVICE     = MM0:
                               LABEL      = DECNET
                               UIC        = [5,300]
                               FILE PRO   = [RWED,RWED,RWED,RWED]
                               ACP NAME   = MTAACP
                               >;
                               >;  NOW RETURN TO THE OPERATOR TERMINAL
                               >;
                               >@ EOF"

ON THE OPERATOR'S TERMINAL,
TYPE "(C/R)" AND WAIT FOR  ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND
THE TAPE TO BE WRITTEN        "PLEASE SELECT FUNCTION
                                 1.  DEFINE PROCESS
                                 2.  DELETE PROCESS
                                 3.  DEFINE OPERATION
                                 4.  LOAD OPERATION
                                 5.  CONTROL OPERATION
                                 6.  CANCEL OPERATION
                                 7.  DELETE OPERATION
                                 8.  RELEASE PROCESS TO RMF
                                 9.  MANUAL OPERATIONS
                                10.  STATUS
                                11.  ABORT DRRTS
                                12.  END OPERATION"
```

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ACTION	SYSTEM RESPONSE
	ONCE THE MMF TAPE IS WRITTEN, DARTS WILL RESPOND "CCT TAPE WRITE COMPLETE, TYPE "@DISMOUNT" ON THE SYSTEM CONSOLE"
ON THE SYSTEM CONSOLE, TYPE "@DISMOUNT(C/R)" DISMOUNT THE TAPE FROM THE PDP 11/34 TAPE DRIVE	ON THE SYSTEM CONSOLE, DARTS WILL RESPOND ">DMO MM0: DMO -- TT0: DISMOUNTED FROM MM0: *** FINAL DISMOUNT *** >DEA MM0: >; >; TAPE IS NOW DISMOUNTED >; >; PLEASE REMOVE TAPE FROM TAPE DRIVE, AND RETURN TO THE OPERATOR TERMINAL >; >@ <EOF>"
SELECT <MANUAL OPERATIONS> ON THE OPERATOR'S TERMINAL, TYPE "9(C/R)"	ON THE OPERATOR'S TERMINAL, DARTS WILL RESPOND "PLEASE SELECT MANUAL OPERATION 1. MDDP 2. MATRIX SWITCH 3. READ MASTER TIME 4. READ MMF TAPE 5. WRITE MMF TAPE 6. CONFIGURE DARTS FUNCTIONS 7. DEVICE INITIALIZATION"
SELECT <READ MMF TAPE> TYPE "4(C/R)"	DARTS WILL RESPOND "AT THE SYSTEM CONSOLE, TYPE "@READTAPE (C/R)" AND ANSWER ALL QUESTIONS THEN RETURN TO THE OPERATOR TERMINAL AND HIT THE RETURN KEY"
MOUNT THE MMF TAPE ON THE PDP 11/34 TAPE DRIVE ON THE SYSTEM CONSOLE TYPE "@READTAPE(C/R)"	ON THE SYSTEM CONSOLE DARTS WILL RESPOND ">DMO MM0: DMO -- VOLUME NOT MOUNTED BY TI: >DEA MM0: >; >; MOUNT MMF TAPE WITHOUT TE WRITE PROTECT RING,AND THEN HIT RETURN >; >* [S]:
TYPE "(C/R)"	DARTS WILL RESPOND ">* DO YOU WISH TO OVERRIDE THE TAPE LABEL? [Y/N]:"
TYPE "N(C/R)"	DARTS WILL RESPOND ">* PLEASE INPUT TAPE LABEL [S]:"

```
ACTION                                                SYSTEM RESPONSE

TYPE "DECNET(C/R)"                    DRRTS WILL RESPOND
                                              ">ALL MM0:
                                               >MOU MM0:DECNET/DENS=1600/VI
                                               MOUNT ** VOLUME INFORMATION **
                                               CLASS      = FILES 11
                                               DEVICE     = MM0:
                                               LABEL      = DECNET
                                               UIC        = [5,300]
                                               FILE PRO   = [RWED,RWED,RWED,RWED]
                                               ACP NAME   = MTAACP
                                               >;
                                               >;  NOW RETURN TO THE OPERATOR TERMINAL
                                               >;
                                               >;@ <EOF>"

ON THE OPERATOR'S TERMINAL,
TYPE "(C/R)" AND WAIT FOR             ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND
CLOSED LOOP PROCESSING TO COMPLETE            "PLEASE SELECT FUNCTION
                                                  1.  DEFINE PROCESS
                                                  2.  DELETE PROCESS
                                                  3.  DEFINE OPERATION
                                                  4.  LOAD OPERATION
                                                  5.  CONTROL OPERATION
                                                  6.  CANCEL OPERATION
                                                  7.  DELETE OPERATION
                                                  8.  RELEASE PROCESS TO MMF
                                                  9.  MANUAL OPERATIONS
                                                 10.  STATUS
                                                 11.  ABORT DRRTS
                                                 12.  END OPERATION"

                                      WHEN THE MMF TAPE IS READ, DRRTS WILL RESPOND
                                             "CCT TAPE READ COMPLETE, TYPE "@DISMOUNT" ON THE SYSTEM CONSOLE
                                              OPR002 WAS ADDED TO THE PROCESS FILE
                                              OPR003 WAS ADDED TO THE PROCESS FILE
                                              OPR004 WAS ADDED TO THE PROCESS FILE
                                              OPR005 WAS ADDED TO THE PROCESS FILE
                                              CLOSED LOOP PROCESSING SUCCESSFUL"

ON THE SYSTEM CONSOLE,                ON THE SYSTEM CONSOLE, DRRTS WILL RESPOND
TYPE "@DISMOUNT(C/R)"                         ">DMO MM0:
DISMOUNT THE TAPE FROM THE                     DMO -- TT0:    DISMOUNTED FROM MM0:    *** FINAL DISMOUNT ***
PDP 11/34 TAPE DRIVE                           >DEA MM0:
                                               >;
                                               >;  TAPE IS NOW DISMOUNTED
                                               >;
                                               >;  PLEASE REMOVE TAPE FROM TAPE DRIVE, AND RETURN TO OPERATOR TERM
                                               >;
                                               >@ <EOF>"
```

16.4.1.5 HDT-AM Uplink and HDT Copy

The following scenarios guide the operator in the use of both of these DRRTS functions. The uplink and copy functions may operate singly or concurrently. Additionally, transmission of multiple logical tapes and retransmission of logical tapes is also shown. The HDT-AM uplink and the HDT copy production status reports are displayed several times to show the change in status of the operations.

ACTION	SYSTEM RESPONSE
	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT COPY STATUS> TYPE "4(C/R)"	THE HDT COPY STATUS REPORT SHOWN IN FIGURE 16.4-20 WILL BE DISPLAYED ON THE VT-78. THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

```
                    HDT COPY PRODUCTION STATUS            DATE: 23-NOV-81
                                                          TIME: 11:48:06

PROCESS             MASTER        MASTER   COPY    LOG  TAPES    COMPLETION
REQUEST  STATUS   HDT LABEL ID    HDDR     HDDR    TU DU/COMP  DATE       TIME

1.TESTCP INACTIVE  L4NHA8100101                        1/0

TOTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-20. HDT Copy Production Status With Inactive Process

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)"	THE HDT COPY STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <LOAD OPERATION> TYPE "4(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT COPY> TYPE "2(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTCP"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L4MMA8100101 ON THE 28-T #2 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL; USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE THE HDT ID FROM THE HDT, OR TYPE "L4MMA8100101(C/R)"	DRRTS WILL RESPOND "MOUNT HDT L4MMA8100102 ON THE 14-T #2 HDDR VERIFY HDDR WITH OCR WAND"
SET 14-TRACK #2 VERNIER SPEED TO 100% FOR RECORD; USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "14-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "LAHNER100102(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
ON THE OPERATOR'S TERMINAL TYPE "Y(C/R)", THEN WAIT FOR THE OPERATION TO START	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL DISPLAY "OPERATION: TESTCP, STARTED"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AN UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDDR STATUS> TYPE "1(C/R)"	THE HDDR STATUS REPORT SHOWN IN FIGURE 16.4-21 WILL BE DISPLAYED ON THE VT-78 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDDR STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER, THEN DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AN UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"

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DRRTS HDDR STATUS

DATE: 23-NOV-81
TIME: 11:59:03

HDDR	STATE	HDT LABEL ID	OPNAME	LAST 1 MINUTE CE	LAST 1 MINUTE UE	CURRENT TOTAL CE	CURRENT TOTAL UE	THRESHOLDS CE	THRESHOLDS UE
14-T 01	DISMNT								
14-T 02	RECORD	L4HHA8100102	TESTCP	1194	1	1194	1	5000	500
28-T 01	STPPED								
28-T 02	PLAYBK	L4HHA8100101	TESTCP	27	0	27	0	5000	500
28-T 03	OFFLIN								
28-T 04	OFFLIN								

Figure 16.4-21. HDDR Status During Copy Operation

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SELECT <HDT COPY STATUS>
TYPE "4(C/R)"

THE HDT COPY STATUS REPORT SHOWN IN FIGURE 16.4-22 WILL BE DISPLAYED ON THE VT-78
THEN, DRRTS WILL RESPOND
"HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

TYPE "1(C/R)"

THE HDT COPY STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER
THEN, DRRTS WILL RESPOND WITH
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO HDT
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

SELECT <STATUS>
TYPE "10(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT STATUS DISPLAY
1. HDDR STATUS
2. MATRIX SWITCH STATUS
3. IMAGE DATA ACQUISITION STATUS
4. HDT COPY STATUS
5. HDT-AM UPLINK STATUS
6. PROCESS DEFINITION TABLE
7. OPERATION DEFINITION TABLE"

SELECT <HDT-AM UPLINK STATUS>
TYPE "5(C/R)"

THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-23 WILL BE DISPLAYED ON THE VT-78
THEN, DRRTS WILL RESPOND
"HOW MANY HARD COPIES DO YOU WANT ? (0-4)"

TYPE "1(C/R)"

THE HDT-AM UPLINK STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER
THEN, DRRTS WILL RESPOND
"PLEASE SELECT FUNCTION
1. DEFINE PROCESS
2. DELETE PROCESS
3. DEFINE OPERATION
4. LOAD OPERATION
5. CONTROL OPERATION
6. CANCEL OPERATION
7. DELETE OPERATION
8. RELEASE PROCESS TO HDT
9. MANUAL OPERATIONS
10. STATUS
11. ABORT DRRTS
12. END OPERATION"

SELECT <LOAD OPERATION>
TYPE "4(C/R)"

DRRTS WILL RESPOND
"PLEASE SELECT OPERATION TYPE
1. HDT-R GENERATION
2. HDT COPY
3. HDT-AM UPLINK
4. PLAYBACK
5. RETROSPECTIVE DIRECTORY GENERATION
6. SETUP PACKING
7. HSS LINE TEST
8. TM LINE TEST
9. HDT COPY LINE TEST"

```
                    HDT COPY PRODUCTION STATUS          DATE: 23-NOV-81
                                                        TIME: 12:02:51

PROCESS                 MASTER      MASTER     COPY     LOG  TAPES   COMPLETION
REQUEST  STATUS      HDT LABEL ID    HDDR      HDDR    TO DO/COMP  DATE      TIME

1.TESTCP ACTIVE     L6HNA8100101 20-T  02 14-T  02       1/0

TOTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-22. HDT Copy Production Status With Active Process

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HDT-AM UPLINK PRODUCTION STATUS

DATE: 23-NOV-81
TIME: 12:03:10

PROCESS REQUEST	STATUS	HDT LABEL ID	HDDR	LOGICAL TAPES TO DO/COMPLETE	COMPLETION DATE	COMPLETION TIME
1. TESTUP	INACTIVE	L0MHA0100104		2/0		

TOTAL NUMBER OF PROCESS REQUESTS: 1

Figure 16.4-23. HDT-AM Uplink Production Status With Inactive Process

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ACTION	SYSTEM RESPONSE
SELECT <HDT-AM UPLINK> TYPE "5(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MOUNT HDT L4NHA8100104 ON THE 28-T #1 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T #1(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4NHA8100104(C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "DO YOU WANT TO START THE OPERATION ? (Y OR N)"
TYPE "Y(C/R)",THEN WAIT FOR THE OPERATION START	DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN COMPLETED PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO NMF 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTUP, STARTED"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"

ACTION	SYSTEM RESPONSE
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SELECT <HDDR STATUS> TYPE "1(C/R)"	THE HDDR STATUS REPORT SHOWN IN FIGURE 16.4-24 WILL BE DISPLAYED ON THE VT-78, THEN DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)"	THE HDDR STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER, THEN DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT-AM UPLINK STATUS> TYPE "5(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-25 WILL BE DISPLAYED ON THE VT-78 THEN, DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
TYPE "1(C/R)", THEN WAIT FOR BOTH OPERATIONS TO COMPLETE	THE HDT-AM UPLINK STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS WHEN THE COPY OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTCP, COMPLETE" WHEN THE UPLINK OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTUP, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. DCRT PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"

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```
                          DRRTS HDDR STATUS                  DATE: 21-NOV-81
                                                             TIME: 13:07:44

                                    LAST  1 MINUTE    CURRENT TOTAL    THRESHOLDS
                                     CE       UE        CE      UE      CE     UE
 HDDR    STATE  HDT LABEL ID OPNAME
14-T  01 OFFLIN
14-T  02 RECORD L4NNA8100101 TESTCP     0        0        12       0  5000    500
20-T  01 PLAYBK L4NNA8100104 TESTUP  2840        1      2840       1  5000    500
20-T  02 PLAYBK L4NNA8100101 TESTCP  1403        7     22422      14  5000    500
20-T  03 OFFLIN
20-T  04 OFFLIN
```

Figure 16.4-24. HDDR Status During Copy and Uplink

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```
                    HDT-AM UPLINK PRODUCTION STATUS          DATE: 21-NOV-81
                                                             TIME: 13:08:11

PROCESS                                      LOGICAL  TAPES      COMPLETION
REQUEST   STATUS    HDT LABEL ID     HDDR   TO DO/COMPLETE   DATE        TIME

1. TESTUP  ACTIVE   L6MMA8100104 20-T  01       2/0

OTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-25. HDT-AM Uplink Production Status With Active Process

ACTION	SYSTEM RESPONSE
SELECT <HDT COPY> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTCP"
TYPE "1(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL DRRTS WILL RESPOND "DISMOUNT HDT L4HHAB100101 FROM THE 28-T #2 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "28-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4HHAB100101(C/R)"	DRRTS WILL RESPOND "DISMOUNT HDT L4HHAB100102 FROM THE 14-T #2 HDDR VERIFY HDDR WITH OCR WAND"
USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "14-T #2(C/R)"	DRRTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"
USE THE OCR WAND TO READ THE HDT ID FROM THE HDT, OR TYPE "L4HHAB100102(C/R)"	ON THE OPERATORS TERMINAL , DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED DO YOU WISH TO EXAMINE THE DATA FILES? (Y OR N)"
ON THE OPERATOR'S TERMINAL TYPE "Y(C/R)"	THE HDT QUALITY FILE DUMPS SHOWN IN FIGURES 16.4-26 & 16.4-27 AND THE HDT COPY OPERATION REPORT SHOWN IN FIGURE 16.4-28 WILL BE PRINTED ON THE LINE PRINTER, THEN DRRTS WILL RESPOND "ARE THE RESULTS ACCEPTABLE? (Y OR N)"
EXAMINE THE REPORTS, AND THEN TYPE "Y(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AH UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT COPY STATUS> TYPE "4(C/R)"	THE HDT COPY STATUS REPORT SHOWN IN FIGURE 16.4-29 WILL BE DISPLAYED ON THE VT-78. DRRTS WILL THEN RESPOND "HOW MANY HARD COPIES DO YOU WANT? (0-4)"

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:13:00

HDT: L6NNA8100101 HDDR: H-4 DATA RATE: 15063 DATA SOURCE: HDT PROCESS: HUTCUP

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
2622029546	0	0
2622030285	11	0
2622031027	5	0
2622031368	11	0
2622032087	25	0
2622032445	1969	0
2622033163	3	0
2622033499	22	2
2622034166	33	0
2622034508	5	1
2622035243	327	1
2622035557	585	0
2622036271	27	0
2622036506	1	0
2622037300	38	0
2622038014	223	2
2622038328	3	0
2622039043	107	3
2622039356	44	0
2622040071	262	0
2622040384	1	0
2622041106	24	0
2622041429	5	0
2622042142	186	1
2622042457	2	0
2622043171	9	0
2622043485	1370	0
2622044200	52	0
2622044514	17	0
2622045229	373	1
2622045542	0	0
2622046257	0	1
2622046572	30844	0
2622047310	14	0
2622048038	33	0
2622048609	27	0
2622049177	831	4
2622049948	168	2

Figure 16.4-26. HDT Quality File Dump For Master HDT

HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:13:01

HDT: L4MHA8100102 HDDR: M-2 DATA RATE: 15063 DATA SOURCE: HDT PROCESS: HDTCOP

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
3061925069	2	0
3061925069	342	1
3061925069	464	0
3061925069	386	0
3061925069	326	2
3061925069	887	11
3061925069	32767	408
2622034186	0	0
2622034509	0	0
2622035246	0	0
2622035598	0	0
2622036272	0	0
2622036587	0	0
2622037301	0	0
2622038015	0	0
2622038329	0	0
2622039044	1	1
2622039357	0	0
2622040072	0	0
2622040390	0	0
2622041107	0	0
2622041430	0	0
2622042143	0	0
2622042458	12	0
2622043172	0	0
2622043487	0	0
2622044201	0	0
2622044815	0	0
2622045230	0	0
2622045543	0	0
2622046250	0	0
2622046580	0	0
2622047311	0	0
2622048039	0	0
2622048416	0	0
2622049179	0	0
2622049547	0	0

Figure 16.3 27. HDT Quality File Dump For Copy HDT

```
                    HDT COPY OPERATION REPORT                DATE: 23-NOV-81
                                                             TIME: 12:12:52
                                                  COMPLETION DATE: 23-NOV-81
                                                  COMPLETION TIME: 12:03:15

HDT-ID: L4NNA8100101    HDDR: 20-T  02   COPY HDDR: 14-T  02

                                                     MASTER            COPY
  LOGICAL                                       UNC-ERR  COR-ERR  UNC-ERR  COR-ERR
  TAPE ID       START TIME        STOP TIME

L4NNA8100102  262.20:30:00.0  262.20:50:00.0       16    37335      422    35100

END OF REPORT
```

Figure 16.4-28. HDT Copy Operation Report

```
                 HDT COPY-PRODUCTION STATUS           DATE: 15-OCT-81
                                                      TIME: 16:21:13

PROCESS             MASTER     MASTER   COPY    LOG  TAPES   COMPLETION
REQUEST  STATUS   HDT LABEL ID  HDDR    HDDR    TO DO/COMP  DATE      TIME

1.TESTCP COMPLETED LAMMAB100101                    0/1   15-OCT-81 16:18:31

TOTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-29. HDT Copy Production Status With Completed Process

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ACTION	SYSTEM RESPONSE
TYPE "4(C/R)"	THE HOT COPY STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HOT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. RETAPE PACKING 7. HSS LINK TEST 8. TC LINK TEST 9. HOT COPY LINK TEST"
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	DRRTS WILL RESPOND "RETRANSMIT THE LOGICAL TAPE JUST SENT ? (Y OR N)"
TYPE "N(C/R)", THEN WAIT FOR THE OPERATION TO START	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTUP, STARTED"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. HDDR STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HOT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT-AM UPLINK STATUS> TYPE "5(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-30 WILL BE DISPLAYED ON THE VT-78 THEN, DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT? (0-4)"

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```
                    HDT-AM UPLINK PRODUCTION STATUS          DATE: 15-OCT-81
                                                             TIME: 16:26:51

PROCESS                                       LOGICAL  TAPES     COMPLETION
REQUEST   STATUS    HDT LABEL ID      MODR    TO DO/COMPLETE   DATE      TIME

1. TESTUP  ACTIVE   L4MHA8100104 28-T  01         2/0

TOTAL NUMBER OF PROCESS REQUESTS:  1
```

Figure 16.4-30. HDT-AM Uplink Production Status During Retransmission

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TYPE "1(C/R)", THEN WAIT FOR THE OPERATION TO COMPLETE	THE HDT-AN UPLINK REPORT WILL BE PRINTED ON THE LINE PRINTER, THEN BORTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HCF 9. CASUAL OPERATIONS 10. STATUS 11. ABORT BORTS 12. END OPERATION" WHEN THE OPERATION HAS COMPLETED, BORTS WILL RESPOND "OPERATION: TESTUP, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	BORTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AN UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-AN UPLINK> TYPE "3(C/R)"	BORTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	BORTS WILL RESPOND "RETRANSMIT THE LOGICAL TAPE JUST SENT ? (Y OR N)"
TYPE "N(C/R)"	ON THE VT-78 AND THE OPERATOR'S TERMINAL, BORTS WILL RESPOND "DISMOUNT HDT LANNAB;00104 FROM THE 20-7 01 HDDR VERIFY HDDR WITH OCR WAND"
ON THE VT-78 TERMINAL: USE THE OCR WAND TO READ THE HDDR ID FROM THE HDDR, OR TYPE "20-7 01(C/R)"	BORTS WILL RESPOND "VERIFY HDT-ID WITH OCR WAND"

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ACTION	SYSTEM RESPONSE
TYPE "1(C/R)", THEN WAIT FOR THE OPERATION TO COMPLETE	THE HDT-AM UPLINK STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER, THEN, DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS COMPLETED, DRRTS WILL RESPOND "OPERATION: TESTUP, COMPLETE"
SELECT <END OPERATION> TYPE "12(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION TYPE 1. HDT-R GENERATION 2. HDT COPY 3. HDT-AM UPLINK 4. PLAYBACK 5. RETROSPECTIVE DIRECTORY GENERATION 6. SCENE PACKING 7. MSS LINE TEST 8. TM LINE TEST 9. HDT COPY LINE TEST"
SELECT <HDT-AM UPLINK> TYPE "3(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT OPERATION 1. TESTUP"
TYPE "1(C/R)"	DRRTS WILL RESPOND "RETRANSMIT THE LOGICAL TAPE JUST SENT ? (Y OR N)"
TYPE "N(C/R)", THEN WAIT FOR THE OPERATION TO START	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO MMP 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION" WHEN THE OPERATION HAS STARTED, DRRTS WILL RESPOND "OPERATION: TESTUP, STARTED"

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ACTION	SYSTEM RESPONSE
USE THE [illegible] HAND TO READ THE HDT ID FROM THE HDT, OR TYPE "[illegible](C/R)"	ON THE OPERATOR'S TERMINAL, DRRTS WILL RESPOND "MATRIX SWITCH CONNECTIONS HAVE BEEN DISCONNECTED DO YOU WISH TO EXAMINE THE DATA FILES ? (Y OR N)"
ON THE OPERATOR'S TERMINAL TYPE "Y(C/R)"	THE HDT QUALITY FILE DUMP SHOWN IN FIGURE 16.4-31 AND THE HDT-AM UPLINK OPERATION REPORT SHOWN IN FIGURE 16.4-32 WILL BE PRINTED ON THE LINE PRINTER, THEN DRRTS WILL RESPOND "ARE THE RESULTS ACCEPTABLE ? (Y OR N)"
EXAMINE THE REPORTS, AND THEN TYPE "Y(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"
SELECT <STATUS> TYPE "10(C/R)"	DRRTS WILL RESPOND "PLEASE SELECT STATUS DISPLAY 1. [illegible] STATUS 2. MATRIX SWITCH STATUS 3. IMAGE DATA ACQUISITION STATUS 4. HDT COPY STATUS 5. HDT-AM UPLINK STATUS 6. PROCESS DEFINITION TABLE 7. OPERATION DEFINITION TABLE"
SELECT <HDT-AM UPLINK STATUS> TYPE "5(C/R)"	THE HDT-AM UPLINK STATUS REPORT SHOWN IN FIGURE 16.4-32 WILL BE SHOWN ON THE VT-78 DRRTS WILL RESPOND "HOW MANY HARD COPIES DO YOU WANT ? (0-4)"
	THE HDT-AM UPLINK STATUS REPORT WILL BE PRINTED ON THE LINE PRINTER, THEN DRRTS WILL RESPOND "PLEASE SELECT FUNCTION 1. DEFINE PROCESS 2. DELETE PROCESS 3. DEFINE OPERATION 4. LOAD OPERATION 5. CONTROL OPERATION 6. CANCEL OPERATION 7. DELETE OPERATION 8. RELEASE PROCESS TO HDT 9. MANUAL OPERATIONS 10. STATUS 11. ABORT DRRTS 12. END OPERATION"

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HDT QUALITY DATA

PAGE: 1
DATE: 23-NOV-81
TIME: 12:24:22

HDT: L4HHA8100104 HDDR: H-3 DATA RATE: 15063 DATA SOURCE: HDT PROCESS: HDTUPL

IRIG TIME	CORRECTED ERRORS	UNCORRECTED ERRORS
2622035180	3	0
2622035474	617	0
2622036167	674	0
2622036470	630	0
2622037167	745	1
2622037461	1920	1
2622038154	504	0
2622038448	904	0
2622039146	1102	1
2622039462	1191	0
2622040156	911	0
2622040449	418	1
2622041143	1044	0
2622041436	687	1
2622042153	531	0
2622042480	941	0
2622043199	935	0
2622043493	580	0
2622044186	842	0
2622044483	961	0
2622035151	4	0
2622035452	457	0
2622036156	1478	0
2622036469	688	0
2622037142	1133	0
2622037435	897	0
2622038128	773	0
2622038425	875	0
2622039121	1232	0
2622039414	871	0
2622040110	1111	0
2622040404	397	0
2622041097	889	0
2622041399	692	1
2622042092	519	0
2622042385	1125	1
2622043078	624	0
2622043372	564	0
2622044077	743	1
2622044374	1195	2
5622043152	8	0
2622043452	650	0
2622044163	807	0
2622044460	788	0
2622045153	1251	0
2622045452	735	0
2622046145	602	0
2622046439	695	0
2622047132	1130	0
2622047425	551	1
2622048119	871	0
2622048412	928	0
2622049105	769	1
2622049399	559	0
2622050092	1164	0
2622050396	655	0
2622051094	677	0
2622051387	721	0

Figure 16.4-31. HDT Quality File Dump for Uplink HDT

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HDT-AM UPLINK PRODUCTION STATUS

DATE: 23-NOV-81
TIME: 12:25:14

PROCESS REQUEST	STATUS	HDT LABEL ID	HDDR	LOGICAL TAPES TO DO/COMPLETE	COMPLETION DATE	COMPLETION TIME
1. TESTUP	COMPLETED	L4NNA8100104		0/2	23-NOV-81	12:22:47

TOTAL NUMBER OF PROCESS REQUESTS: 1

Figure 16.4-32. HDT-AM UPLINK Production Status With Completed Process

SECTION 17

CONTROL POINT PROCESSING

17.1 ENVIRONMENT/RESOURCES

The control point processing (CPP) function is a manpower intensive operation. There is a large staff of control point technicians dedicated only to this effort in order to meet the requirement of selecting and entering an average of 100 new control points per day. The computer resources required to support this effort include the MMF-M DEC-2050 and the MIPS VAX 11/780 including peripherals. Two MIPS hardware devices are used only for CPP; the Sonic Digitizer and the Zoom Transfer Scope (ZTS). These are located in special rooms adjacent to the MIPS computer room, together with other CCP-used hardware and equipment, including VT100s, Comtals, map shelves, and film transparency viewers. The software required for CPP consists of several GMS (Ground Management System) routines in the MMF-M, all CPLB (control point library build) routines and several CCP (control and communication package) routines in MIPS, and several utilities. Since there is data transferred between MMF-M and MIPS, the Decnet link is utilized together with the software required to prepare and handle these transfers. The parts of the MMF-M data base used by CPP are: TBD.

17.2 OVERVIEW/BACKGROUND

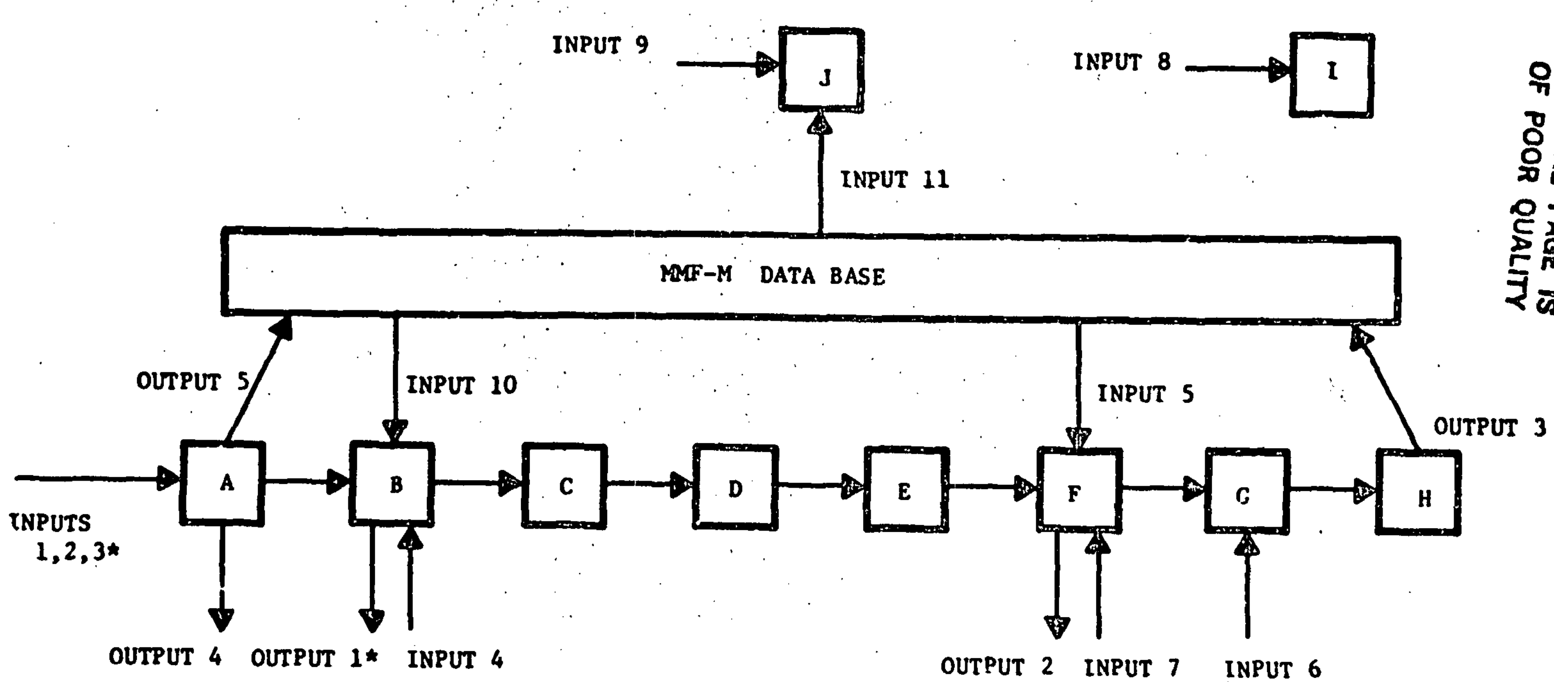
The primary purpose of control point processing (CPP) is to generate a library of control points, which are required in image data processing to remove unknown random and systematic errors so that precise geometric corrections can be obtained. The CPP function consists of the manual identification of control

points, the computations involved in assigning a precise location to each control point, the building of the control point library, the control of these processes, the initial set-up required to keep this function operating smoothly, the bookkeeping needed to track progress in control point selection, the examination of control points failing during archive generation and the deletion of unwanted control points.

17.3 FUNCTION DESCRIPTION

The CPP function can be decomposed into ten steps, as shown in Figure 17-1. Tables 17-1 and 17-2 give the inputs and outputs for this function. Although the various steps can (and will) be performed asynchronously, conceptually they can be discussed as a single flow without simplifying the control or flow. In most cases, steps A through H in Figure 17-1 are done in the order shown for a particular WRS area, however, there are cases when only steps A and F through H are needed.

CPP can be considered a standalone function since it is decoupled from normal data processing. The primary input, the areas of the world for which control points are needed, comes from the program office, and the primary output, the control point library information, goes into the MMF-M data base. This information can (and will) be used in the archive scheduling function to create the ancillary data files which are then an input to the archive generation function. However, control points are not required for these functions to operate successfully.



A: CONTROL POINT SET-UP
B: SCENE SELECTION
C: CANDIDATE CONTROL POINT SELECTION
D: CANDIDATE CONTROL POINT DIGITIZING
E: CANDIDATE CONTROL POINT ENTRY
F: CONTROL POINT SCHEDULING
G: CONTROL POINT GENERATION
H: CONTROL POINT COMPLETION
I: FAILED CONTROL POINT EVALUATION
J: CONTROL POINT DELETE

*SEE TABLES 17-1 AND 17-2 FOR DETAILS

Figure 17-1. Individual CPP Steps, Showing External Interfaces

Table 17-1. CCP External Inputs

ITEM	CONTENTS	SOURCE
1. Maps	Large and small scale, accurate maps	Project Office
2. 70mm QA Film	Quality Assurance Film from MAG	QA Group
3. Desired Scenes	List of WRS area, CP types, priority	Project Office
4. 241 mm Archival Film		MMF Staging Area
5. Tape Information		Data Base
6. Input Tapes	HDT/CCT-AM	TAS
7. Allocation Parameters		Production Control
8. Failed CP Tape	Control Points which failed in MAG	MIPS
9. List of CPs to be deleted		Performance Evaluation Personnel
10. Previously Processed Scenes	For each WRS cloud cover, quality info	Data Base
11. Control Point Library Information	CP Directory	Data Base

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Table 17-2. CPP External Outputs

	ITEM	CONTENTS	DESTINATION
1.	241 mm Film Request		Production Control
2.	Move Order Request	CCT/HDT Move to MIPS	TAS
3.	Updated Control Point Library	Control Point Chips and Directories	Data Base
4.	Desired Map List		Program Office
5.	70mm Scene Codes		Data Base

Figure 17-2 shows all the individual software units used in CPP and groups them into the ten steps shown in Figure 17-1. Normally each step is run separately. Many of these software units are basically utilities for production bookkeeping or for reformatting data files. The units which are unique to CPP and of primary importance in the major flow of control point library building are CPDIG, CPGEN and GACPCU.

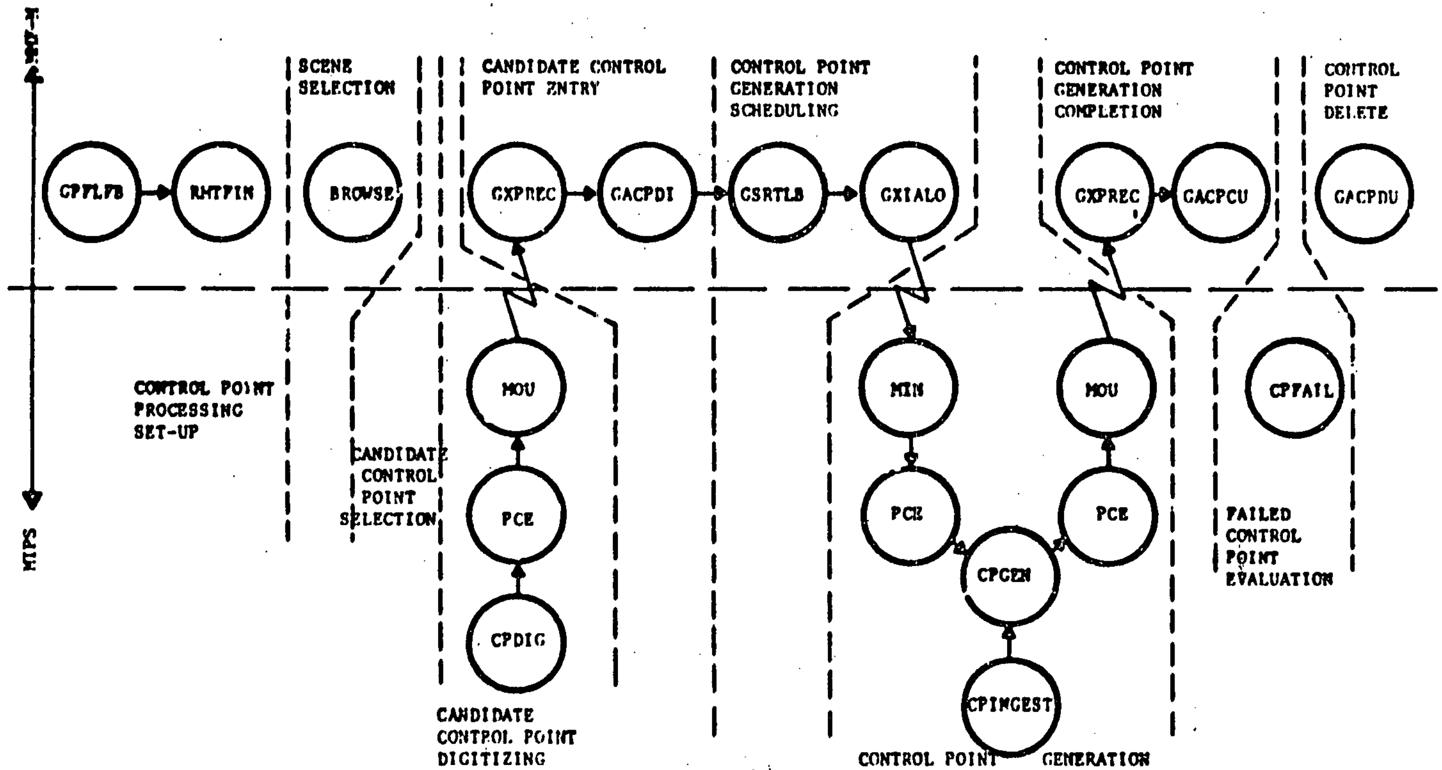

Figure 17-2. Control Point Processing Software Structure

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This presentation of the CPP function includes the CP technicians as part of the function. Consequently, the external inputs and outputs do not include the usual operator key-ins, displays and reports; they are considered internal interfaces. In this function most of the external inputs are not data files but hardcopy lists, maps, and film, which is a result of the highly manual aspects of the function. Table 17-1 lists the inputs and their sources and gives a brief description of their contents. The maps necessary for generating geodetic control points (GCPs) and the identification of the areas of the world (in terms of WRS path/row values) where control points are desired will be provided by the Project Office and will be given to the lead CP techician through the Data Processing Operations Manager. The 70 mm film will be received from the QA Group after it has been assessed and examined for potential system problems. It will be cataloged and retained in the CP area for later reference. The 241 mm film will be requested by the CP technicians and will be generated following the normal procedures outlined in Sections 12, 13 and 14 and returned to the CP group from the MMF-M staging area. The data base will provide information about the tapes required for CP generation and their location, and will also be utilized to obtain historical data about scenes which were successfully processed through archive generation in the past, and which might be useful to provide control points. The CCTs containing control points which failed during HDT-AM generation (see Section 10.4) will normally be made once a day on each MIPS string and will be delivered to the Image Analysts by the MIPS computer operator. The list of control points to be deleted from the library will be provided by the image anlaysts based on their review of the failed CP CCT,

examination of the archive generation QA report, and examination of CP library information about each point.

The main output from the CPP function is the control point information in the CP library for each WRS area processed. Although all software units generate processing summary reports, the major ones are kept by the CP group and therefore are not outputs of the function. Table 17-2 lists the outputs and their destinations and gives a brief description of their contents. Largely, they are production control items required for ordering film and tapes, or lists of maps which must be obtained before required areas can be processed. For each 70 mm image a code is entered in the data base which identifies the likely utility of that scene for control point purposes, i.e., whether it is cloud and snow free and has little haze and good contrast. This code becomes part of the 70 mm film catalog which is used to select candidate control point scenes.

17.4 PROCESS OPERATIONS

In this section some general comments about Control Point Processing are given. The CPP function has a large dedicated staff which will handle nearly all the activities for control points. There will be MIPS computer operators utilizing the VAX 11/780 machines at the same time that CPP is in process since CPP will usually be a background task. These operators will also assist CPP by mounting tapes, responding to alarms and messages, and handling the interaction with HMP-M. The highly interactive digitization and CP designation activities are menu driven and are not discussed in detail in this document. Additional procedures will be required for them.

The only CPP activities on the MMF-M system that are not normally completely automatic are the 70 mm film code entry, using BROWSE to query the data base, and control point delete. These will all be done by the members of the CP group. The automatic parts of CPP in MMF-M will be set up and monitored by the MMF computer operator.

To process 100 control points requires about 10 MIPS string hours, about 2 hours for digitization, and 8 hours for CP generation. Because of the low CPU utilization, all CP activities on MIPS are normally run in the "background" mode. Digitization and the failed CP evaluation processes can be run concurrently with almost all other processes. For the CP generation process, the only constraints are that only one HDT ingest process can be operational at a time on a string, and only one scene can be put on disk for processing. In terms of computer loading and more rapid response to operator commands, running CP generation concurrently with PEPG allows the most flexibility.

Because it is undesirable to have a large backlog in any of the queues in the CPP function, the digitizing process will be used to keep the queue lengths in front of the CP generation process to less than about 10 scenes (2.5 days production). The number of scenes in the queue can be determined by using an MMF terminal to examine the index files for the work allocated to each string.

17.4.1 CONTROL POINT SET UP

The control point set up process consists of several manual activities which are performed prior to the actual control point selection/generation. In some cases

these activities may occur only occasionally as inputs are received. The main inputs to this process are maps, 70 mm QA film, and lists of scenes for which control points are required. Each of these inputs is handled separately, as shown in Figure 17-3. However, there is a link between the list of required scenes and maps, since if maps are not available for desired scenes they must be ordered, if possible. Since maps are so important for control point library build and there will be such a large number of them, they must be carefully filed. As soon as new maps are received they are integrated with those in the map library. The library has two areas, active and storage. All new maps go into the active area, which contains marked maps and maps for areas which still lack selected candidate CPs. The storage area contains those maps which are no longer required for candidate CP selection.

The list of WRS areas for which control points are desired and/or required comes from the Project Office. Figure 17-4 shows the form used for this input, which will usually be received infrequently. In some cases, a specific reference scene ID may be specified for a particular path/row area, desired season(s) or specific satellite. For each path/row specified a file will be created to house all information gathered about that area during the CPP function. In addition, an entry will be made in the log book which is used to track the progress of this WRS area during the control point selection/generation activities. This log records the pertinent information about the area, such as scene ID used, HDT ID, operator assigned to handle the area, and the dates on which certain key steps were completed.

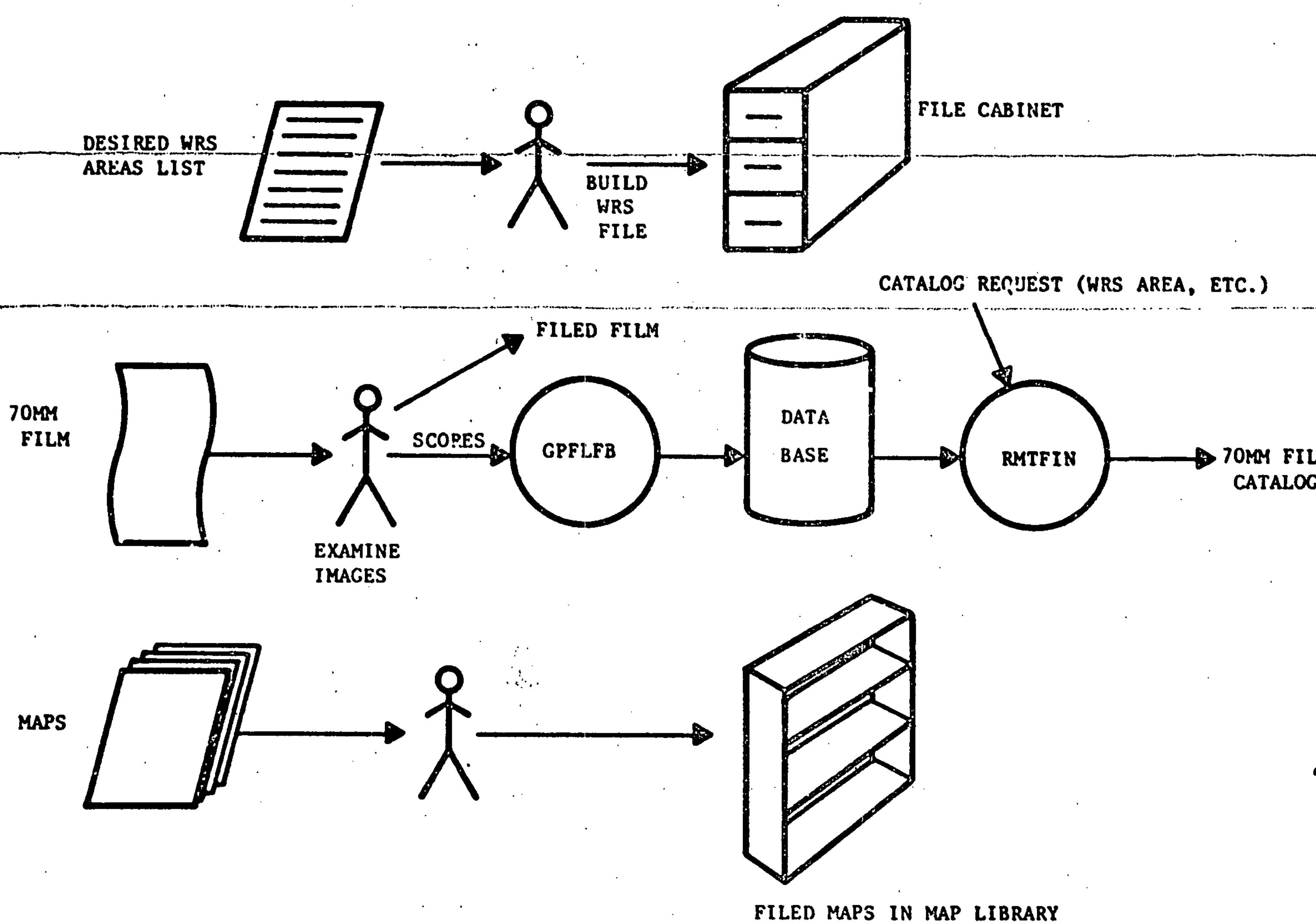

Figure 17-3. Control Point Set-Up Process

WRS PATH/ROW	SCENE ID (OPTIONAL)	PRIORITY	CONTROL POINT TYPE(S)	SEASON(S) (OPTIONAL)	SATELLITE (OPTIONAL)

Figure 17-4. Control Point Requirements

The third part of this set up process is the handling of the 70 mm QA film. This film is routinely generated during the Archive Generation function, sent to the photo lab for processing, examined by QA for image processing problems, and then given to the CP group for their use and for retention. This film is examined to find images which appear to be suitable for control point processing purposes. A code will be assigned to each image indicating whether it should be considered in the future, and also indicating how desirable the image is. This information will be used in the scene selection process to speed up the choice of the best possible reference scene for any WRS path/row. Once each scene is examined, the film is filed for possible later examination and the codes are taken to MMF-M where they must be entered via an interactive terminal. Figure 17-5 shows the screen display provided to the CP technician for each scene. The summary report generated by GPFLFB is shown in Figure 17-6. The codes are put into the data base and at some later time, perhaps monthly, a catalog of the 70 mm film images on each roll will be requested using the RMTFIN software unit. An example of the format of this catalog is shown in Figure 17-7. This catalog does not currently provide the codes previously entered; therefore, changes will have to be made to RMTFIN.

17.4.2 SCENE SELECTION

The scene selection process is totally manual, although it does utilize the BROWSE software unit. The purpose of this process is to identify high quality scenes for those path/row areas requested by the Program Office. These scenes will then be used in the candidate control point selection process.

```
GPFLFB----------------PHOTO LAB FEEDBACK (ENTRY SCREEN 2)----------------GPFLFB
GPFLFB
GPFLFB                NASA SCENE ID     :  4280107050
GPFLFB                INTERNAL SCENE ID:  4H0110282801
GPFLFB
GPFLFB                      AVAILABLE        BAND        QUALITY ASSESSMENT
GPFLFB                        BAND           FRAME               OR
GPFLFB                       NUMBER          NUMBER          ERROR CODE
GPFLFB
GPFLFB                          1             0001            _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        ______
GPFLFB
GPFLFB
```

```
GPFLFB----------------PHOTO LAB FEEDBACK (ENTRY SCREEN 2)----------------GPFLFB
GPFLFB
GPFLFB                NASA SCENE ID     :  4280107050
GPFLFB                INTERNAL SCENE ID:  4H0110282801
GPFLFB
GPFLFB                      AVAILABLE        BAND        QUALITY ASSESSMENT
GPFLFB                        BAND           FRAME               OR
GPFLFB                       NUMBER          NUMBER          ERROR CODE
GPFLFB
GPFLFB                          1             0001            9______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        _______
GPFLFB
GPFLFB                                                        ______
GPFLFB
GPFLFB
```

Figure 17-5. Scene Assessment Display

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```
LISTING   : GP0310                NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :         1
SUBSYSTEM :    GMS                           GODDARD SPACE FLIGHT CENTER                  DATE : 23-NOV-81
                                       LANDSAT MISSION MANAGEMENT FACILITY               TIME :     13:02

                                           GPFLFB SUMMARY REPORT LISTING              DATABASE TYPE : MSS
                                           ============================

     THE FILM ROLL ID IS:                   L4MOM8100101
     NUMBER OF SCENES ACCEPTED IS:          004
     NUMBER OF SCENES CANCELLED IS:         000
     NUMBER OF SCENES REWORKED IS:          000
     NUMBER OF SCENES STARTOVER IS:         000
                                            ===
     NUMBER OF SCENES ON EACH FILM IS:      004

GPFLFB - END OF PROCESSING
```

Figure 17-6. GPFLFB Summary Report

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```
REPORT    : RM1920                NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                          PAGE :         1
SUBSYSTEM :    PSS                         GODDARD SPACE FLIGHT CENTER                                     DATE : 11-NOV-81
                                      LANDSAT MISSION MANAGEMENT FACILITY                                  TIME :     08:01

                                     TAPE/FILM INVENTORY REPORT (RPTFIN)

                                              MEDIA TYPE :  KA

                                    SORTED BY MEDIA TYPE AND WORK STATION

                                    PERIOD:   01-JAN-81   THRU    03-JAN-81

WORK         PRODUCT            SEND TO         CREATION        NUM            NUM           DATA
STATION      ID                 FACILITY        DATE            INTERVALS      SCENES        SOURCE

MIP          N4THAR100601       CSF             81001                  10         101        0

              INTERVAL         INTERNAL          ERROR          NASA           QUADRANTS
              SEQ NUM          SCENE ID          CODE           SCENE ID       PROCESSED

                  0.1          4M0010010001      MMF001         M000101011
                  0.1          4M0010010001      MMF001         M000101011     1234

WORK         PRODUCT            SEND TO         CREATION        NUM            NUM           DATA
STATION      ID                 FACILITY        DATE            INTERVALS      SCENES        SOURCE

MIP          N4THAR101001       CSF             81001                  10         101        0

              INTERVAL         INTERNAL          ERROR          NASA           QUADRANTS
              SEQ NUM          SCENE ID          CODE           SCENE ID       PROCESSED

                  0.1          4M0010010001      MMF001         M000101011
                  0.1          4M0010010001      MMF001         M000101011     1234

WORK         PRODUCT            SEND TO         CREATION        NUM            NUM           DATA
STATION      ID                 FACILITY        DATE            INTERVALS      SCENES        SOURCE

MMF          N4THAR100301       MIP             81001                  10         101        0

              INTERVAL         INTERNAL          ERROR          NASA           QUADRANTS
              SEQ NUM          SCENE ID          CODE           SCENE ID       PROCESSED

                  0.2          4M0010010001      MMF001         M000101011
                  0.2          4M0030010001      MMF001         M000101011     1234

WORK         PRODUCT            SEND TO         CREATION        NUM            NUM           DATA
STATION      ID                 FACILITY        DATE            INTERVALS      SCENES        SOURCE

MMF          N4THAR100401       MIP             81001                  10         101        0
```

Figure 17-7. Tape/Film Inventory Report

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Figure 17-8 shows the basic flow for the scene selection process. Once an area has been identified by the Program Office as requiring control points, and all maps are available, a previously acquired scene for each WRS path/row involved must be selected. If no scene exists, or if the ones available are not adequate, then it will be necessary to wait for future acquisitions. The MMF-M BROWSE capability is used to get a list of all acquisitions for a WRS frame and to get the cloud cover and the quality codes. (Detailed information about the scene and its quality will be contained in the QA reports). When some potential scenes for a path/row location have been selected, the 70 mm (QA) film images will be retrieved from the 70 mm film roll archive located in the CP area and examined to select the best candidates. To locate the proper film rolls, a catalog giving each scene and its corresponding roll ID will be used. One field of this catalog will give a code which indicates whether the image was felt to be particularly suited for library build purposes. This code will be assigned by a control point technician after QA has finished examining the film for its purposes.

The criteria for selecting a scene include the season (or sun angle), "good" overall scene quality, "high" contrast, and a minimum of haze, snow and clouds. The most desirable season may be different in different parts of the world. In general, spring and fall are felt to be the best choices. It may also be necessary to have CPs from several seasons in the library for an area. Normally these will not be added at the same time.

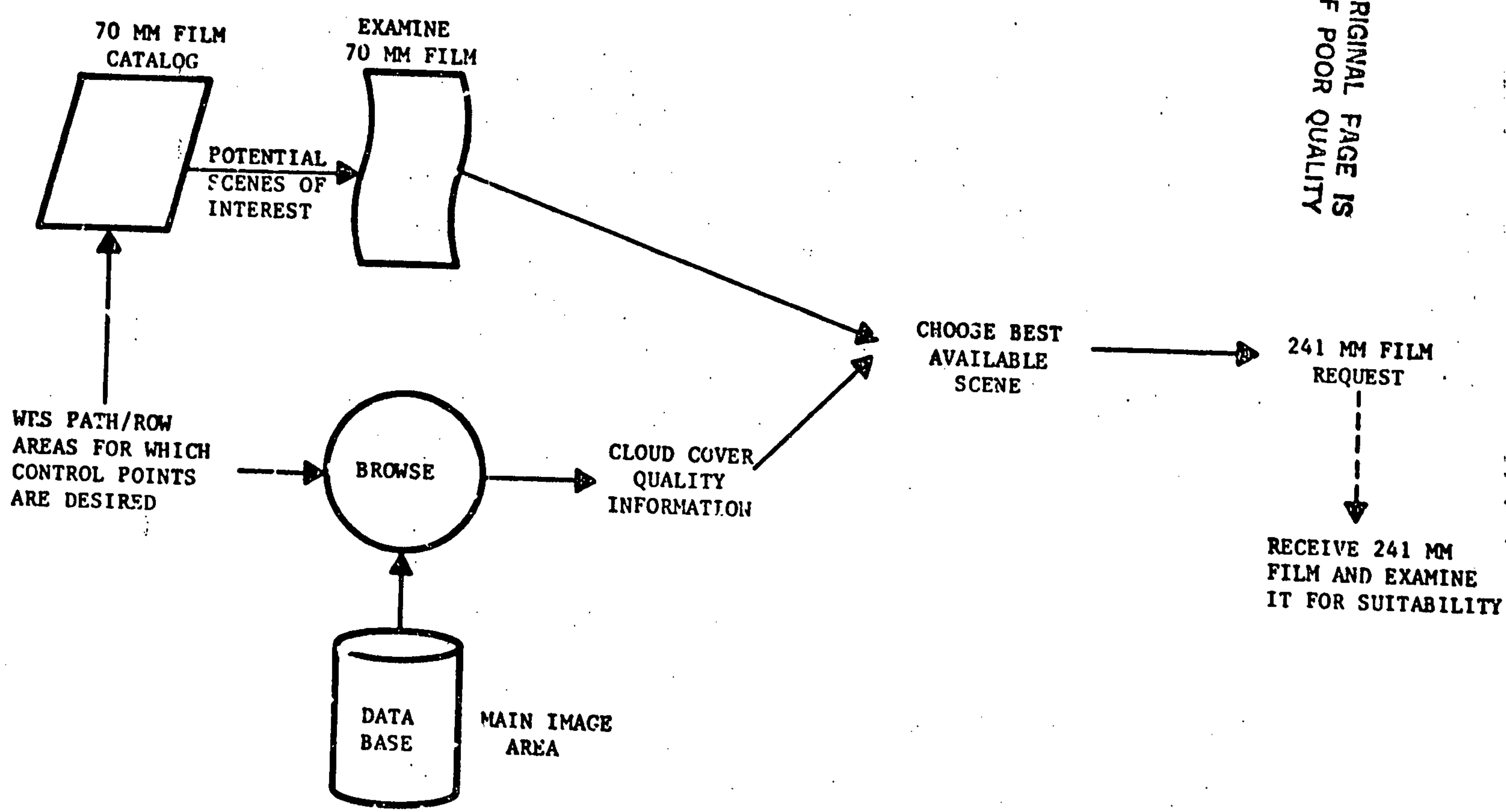

Figure 17-8. Scene Selection Process

When the prime candidate has been selected, 241 mm film for the scene must be ordered. This imagery will be examined to verify that the scene is acceptable for CP generation purposes. This verification is necessary since the 70 mm imagery may give a misleading impression in some cases, inasmuch as it is subsampled and contains only one band.

17.4.3 CANDIDATE CONTROL POINT SELECTION

The candidate control point selection process is completely manual. The only equipment used are the small light tables and a loupe. The purpose of this process is to identify up to 25 points in the scene which are observable both in the 241 mm film images and in available high resolution maps. These points will then be used in the control point generation process. All candidate CPs which are accepted in the control point generation process become geodetic control points (GCP) since their original selection and their locations are derived from maps.

Ideally, 25 CPs are desired per scene, one in each of 25 equal-sized parallelograms (zones) covering the scene area (see Figure 17-9). Also, ideally, each of these points would come from maps. To select a point using the 241 mm images and maps, the CP technician must locate the same feature in both.

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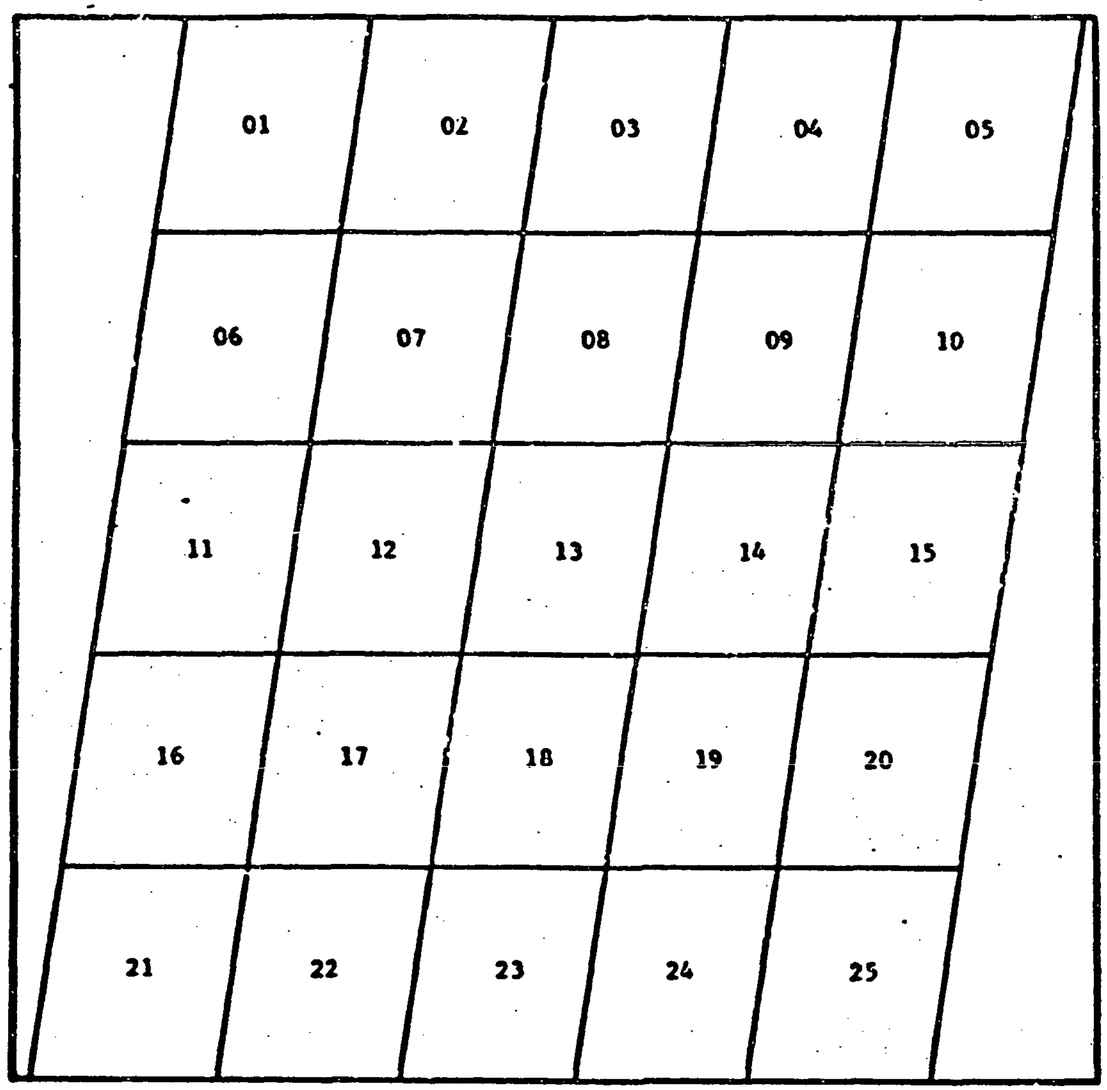

Figure 17-9. The 25 Control Point Zones in a Scene

The F241-AM product is not geometrically correct, but it has been corrected for earth rotation and for the effect of pixel aspect ratio, so that it visually approximates a geometrically corrected scene. The external tick marks will be reasonably accurate in this case, and will provide a reference for finding the maps for desirable features (there can be up to 200 maps for a single scene). Small scale maps will be used to establish a reference; there are only about four 1:250,000 maps for a scene.

A candidate control point can come from any band so the control point technician will have to look at all four images using a light table and a loupe. Bands 2 and 4 normally show features the best, and sometimes show different features.

Once a point has been positively identified on both an image and a map, it is marked on both and becomes a "candidate CP". The actual marking consists of circling the point on the 241 mm film image, placing a small pencil dot on the map and circling the dot. The dot is the actual control point and will be placed on the map near the identifiable feature. This is done to simplify the later overlay of video data on the map using the ZTS.

As each point is identified for a scene, it is given a temporary number for convenience and is added to an inventory list which gives the map ID and scale (coded), the elevation, and a brief description of the feature (see Figure 17-10). The number for each point is the NASA scene ID (including sensor) followed by a sequence number. This number is put on the map. The image requires only the sequence number since the scene ID is part of the annotation

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GCP INVENTORY

WRS PATH/ROW: ______ ______ SCENE ID: ______________ OPERATOR: ______________

COUNTRY: ______________ INPUT TAPE ID: ______________ SENSOR: ______________

NO.	MAP NAME	STATE	MAP DATE	SCALE	PROJ	TER-RAIN CODE	FEA-TURE CODE	COMMENTS	LATITUDE	LONGITUDE	ELEV	BAND
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												

START DATE: __________ DIGITIZING DATE: __________ ENTRY DATE: __________

Figure 17-10. GCP Information for a Scene

and space may not be available for many number entries on a single image of 241 mm film. When all the points have been selected the marked maps are set aside, together with the inventory list and the film, to be used in the digitizing and CP generation steps. The unused maps are returned to the map library and filed.

The major criterion for selecting candidate CPs is to find regions that can be accurately overlaid using the ZTS, thus reducing the errors in that step of the library build process. Furthermore, large scale maps of the highest quality, and recently updated to have the latest man-made features, should be used as much as possible to minimize map-introduced errors. CPs should always be features which are expected to be constant over time. Unfortunately, this means that land/water boundaries, which provide the best correlations in archive generation, should be avoided. This is because water levels in lakes and rivers change throughout the year, and can occasionally change dramatically as a result of floods, etc. Permanent unique man-made features are the best, such as airports and large road interchanges (although even these are subject to change). Another consideration is to attempt to select candidate points that will make good control points for future correlation in archive generation. Although there will be studies and evaluations performed during the life of the

mission to better define what makes a "good" control point, some properties expected to be important for the 32 line x 32 pixel region (chip) centered on the CP are:

a. The features and background are not expected to dramatically change in appearance throughout the year
b. Sufficient detail and contrast exists to form well-defined edges when enhanced, but not so much detail as to cause a confused mass of edges
c. The features are not expected to move or be changed either by natural or human causes
d. The features are distinctive (i.e., not similar to other features in the vicinity, such as another road intersection one mile away).

17.4.4 CANDIDATE CONTROL POINT DIGITIZING

The candidate control point digitizing process determines the exact location of candidate control points from the marked maps and prepares operator entered information about candidates for transfer to MMF-M. The equipment required for this process are a Sonic Digitizer and a VT100 terminal, attached to a MIPS string.

Figure 17-11 shows the basic flow for Candidate CP Digitizing. An example of the processing summary report from CPDIG is shown in Figure 17-12. The CPDIG software unit is initialized from the MIPS Command Menu by typing the "DI" response to the "FUNCTION" query. After program initiation the system will request scene related information, such as NASA scene ID and WRS path and row. A

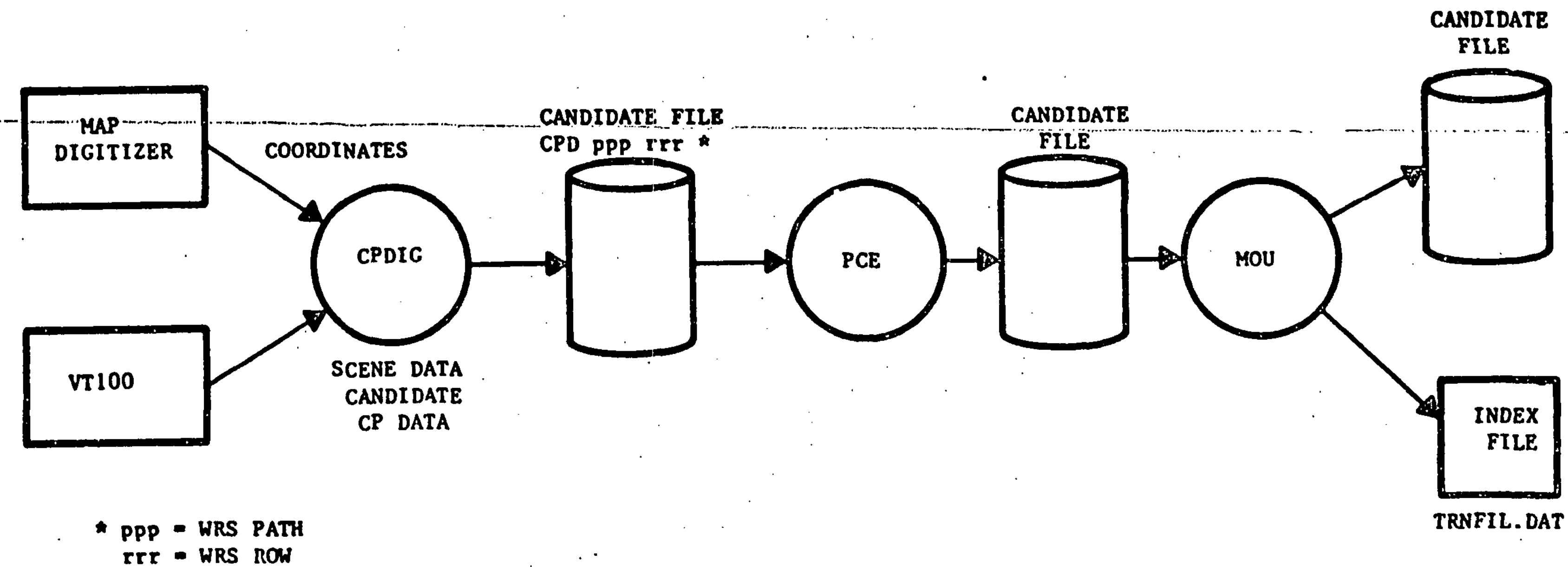

Figure 17-11. Candidate Control Point Digitizing Process

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```
CPDOS                         CONTROL POINT DIGITIZATION PROCESSING SUMMARY                          PAGE  1
DATE:  9/ 4/81
TIME: 11:51:14
                             NASA SCENE ID: 4112211111
                             INTERNAL SCENE ID:      4N0110111122
                             NIPS STRING:
                             PARAMETER FILE: NIPS SHORT TERM PARAMETER FILE
                             CPDIG VERSION: 0.0
                             STATUS CODE:  1
                             OPERATOR: NNNNNNNNNNN
                             NUMBER OF CANDIDATE GCP'S:  1

CANDIDATE CONTROL POINT # 1
DESCRIPTION: DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
MAP ID: IIIIIIIIIIIIIIIIIIIIIII    MAP SCALE: 1:1000000
LATITUDE = 4132298N  LONGITUDE =  7032302W  MAP COORDS: X=+20.79  Y=+22.20  ELEVATION = +    7  BANDS USED FOR SELECTION = 4
LAT-LONG OF SURROUNDING TIC MARKS: 4137300 N - 07030000 W     MAP COORDS. OF SURROUNDING TIC MARKS:   X=+06.14 Y=+27.40
                                   4137300 N - 07030000 W                                               +06.47  +11.04
                                   4130000 N - 07030000 W                                               +26.28  +11.38
                                   4130000 N - 07037300 W                                               +27.92  +27.78
```

Figure 17-12. CPDIG Processing Summary

map containing a candidate CP is then placed on the digitizer (which must be in the "POINT" mode), the cursor is positioned over the pencil dot marking the candidate CP and its location is sent to the VAX. The cursor is then moved to each of the closest four map tick marks surrounding the candidate CP, and the location of each will be sent to the VAX. Following this, the latitude and longitude of the tick marks are entered via the VT100 and the VAX calculates the candidate CP's latitude and longitude. Finally, some of the associated data about the candidate CP from the inventory list (shown in Figure 17-10) generated during the CCP selection process is entered via the VT100. This information is packaged by PCE and MOU on a scene basis.

Once the digitizing for a scene is complete, the maps will be filed unless the CP generation is likely to occur within the next few days. Also, the film and inventory lists will be filed.

17.4.5 CANDIDATE CONTROL POINT ENTRY

The candidate control point entry process retrieves candidate control point information from MIPS via Decnet, verifies the information and enters it into the ground control point area of the data base. This information is utilized by the control point generation scheduling process to create the process requests and by the control point generation completion process when the actual CP library entries are built.

Figure 17-13 shows the basic flow for candidate control point entry. An example of the report produced by GACPDI is shown in Figure 17-14.

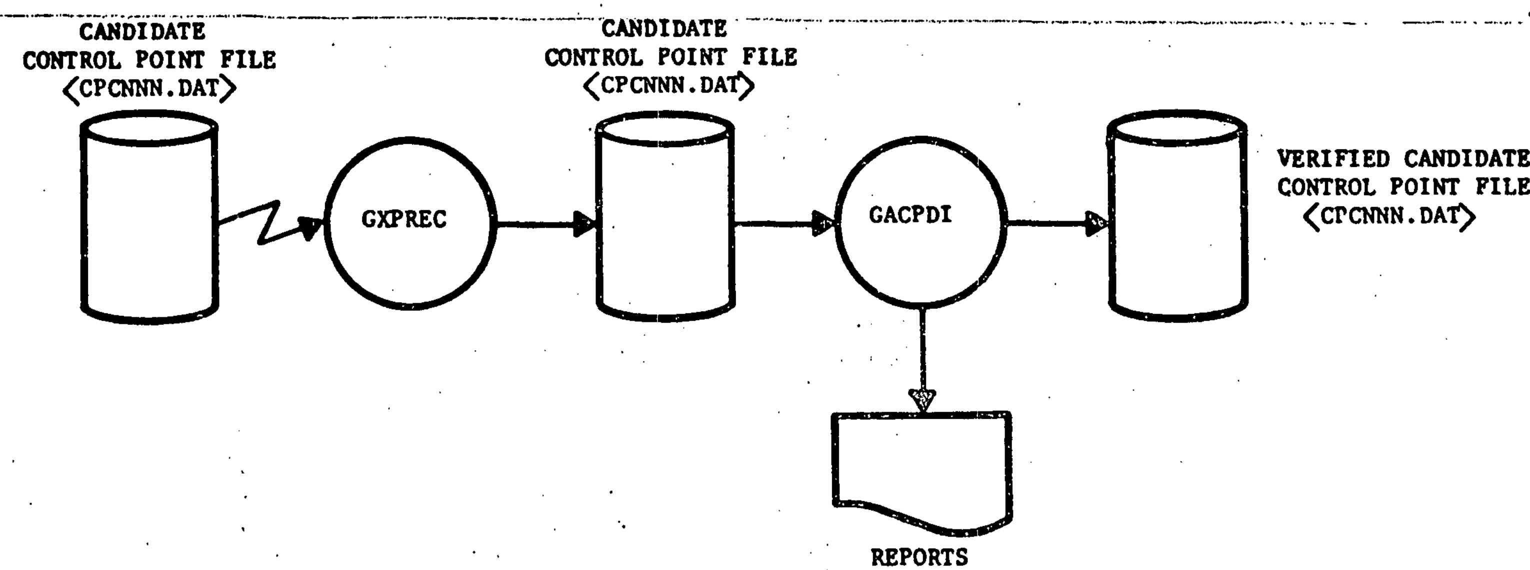

Figure 17-13. Candidate Control Point Entry Process

LISTING : GA1010
SUBSYSTEM : GMS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 23-OCT-81
TIME : 09:29

OPERATING MODE: MANUAL

CANDIDATE CONTROL POINT PROCESSING SUMMARY REPORT

DATA BASE TYPE: MSS

FILE-NAME	NUMBER OF SCENES	PROCESSING ACTION	NASA SCENE ID	INTERNAL SCENE ID	NUMBER OF CANDIDATE C.P.	CANDIDATE C.P. LATITUDE	CANDIDATE C.P. LONGITUDE
CPC001	01	ACCEPTED BY OPERATOR					
			4010012010	4H0340270100	21		
						N4220016	W13406092
						N4220018	W13406091
						N4220024	W13406126
						N4220026	W13405021
						N4220029	W13405043
						N4220063	W13405172
						N4220069	W13405161
						N4220102	W13405126
						N4220108	W13406004
						N4220111	W13406129
						N4220113	W13406011
						N4220117	W13406263
						N4220121	W13406149
						N4220129	W13406176
						N4220145	W13406222
						N4220167	W13407100
						N4220172	W13407081
						N4220191	W13407149
						N4220221	W13407211
						N4220246	W13407076
						N4220247	W13407198
CPC002		REJECTED BY OPERATOR					
CPC003	02	ACCEPTED BY OPERATOR					
			4010215023	4H0500210102	18		
						N4517267	W14612101
						N4517216	W14612033
						N4517043	W14612040
						N4515191	W14614061
						N4515215	W14614067
						N4515265	W14614096
						N4515313	W14613172
						N4516063	W14617071
						N4516066	W14612075
						N4516291	W14613223
						N4517173	W14613298
						N4517166	W14609064
						N4517080	W14609244
						N4514097	W14609382
						N4514121	W14609211
						N4512083	W14610117
						N4511262	W14612431
						N4533061	W14620417
			4010312022	4H0500220103	25		

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Figure 17-14. Candidate Control Point Summary Report

17.4.6 CONTROL POINT GENERATION SCHEDULING

The control point generation scheduling process creates the process request files which tell MIPS the scenes for which the generation of control points is required. This process either receives inputs directly from the candidate CP entry process or from the operator, depending on the type of control points desired. The manual mode is used when RCPs or additional SCPs are desired; in this case the operator enters the scene ID. If candidate CPs were selected for a scene, this process creates the PR, which includes information about the candidates, in particular their latitude/longitude location and the map from which they were selected.

Figure 17-15 shows the general flow for control point generation scheduling. An example of the processing summary report from GSRTLB is shown in Figure 17-16. As in other PR generation routines, GSRTLB checks to see where the input tape required for each PR is located and generates a move order request if the tape is not in the desired location (in MIPS or in transit to MIPS in this case). The PR itself is not generated until the tape is in one of the acceptable locations. The GXIALO routine allocates work to the MIPS strings, including control point generation process requests. The input parameters to this routine identify which strings should be sent CPP work and how the work should be divided among the strings. The allocator then puts the PR name in the appropriate CURINX file. There is a separate file for each string, and the PR is ready to be transferred to MIPS via Decnet utilizing the standard protocols.

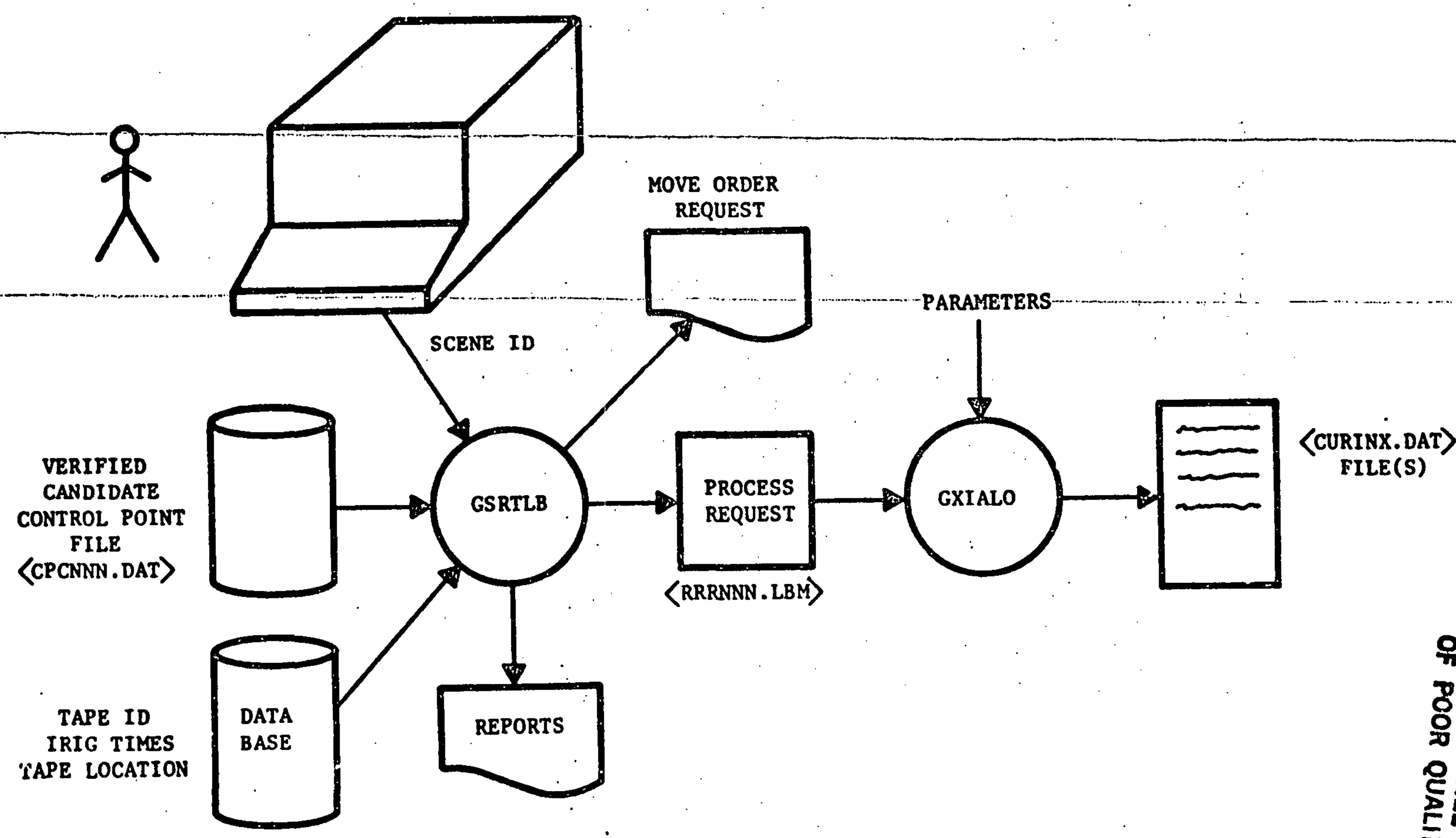

Figure 17-15. Control Point Generation Scheduling Process

```
LISTING   : GS1140            NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                    PAGE :         1
SUBSYSTEM :    GMS                    GODDARD SPACE FLIGHT CENTER                              DATE : ??-OCT-81
                                 LANDSAT MISSION MANAGEMENT FACILITY                           TIME :     14:53

PROCESSING MODE: MANUAL    RETROSPECTIVE LIBRARY BUILD REQUEST GENERATOR SUMMARY REPORT   DATABASE SENSOR TYPE :    MSS

     PROCESS REQUESTS INITIATED THRO' THE OPERATOR REQUEST
     OPERATOR ID: MMF-BUILDG5
```

PROCESS REQUEST FILE NAME	PROCESS REQUEST IDENTIFICATION	HDT-A/ CCT ID	NUMBER OF SCENES	NASA SCENE ID	INTERNAL SCENE ID	NUMBER OF CONTROL POINTS REQUESTED	OPERATOR ACTION
RPR008	MIP812950008	L4MHAB122001	1	4011012146	4M1210640110	10	YES
RPR009	MIP812950009	L4MHAB122102	1	4011114469	4M1210650111	12	YES
RPR010	MIP812950010	L4MHAB122203	1	4011207092	4M1210660112	13	YES

```
INFO: THE OPERATOR REQUESTED TERMINATION OF THE PROGRAM

GSRTLB: END OF PROCESSING
```

Figure 17-16. GSRTLB Summary Report

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17.4.7 CONTROL POINT GENERATION

The control point generation process is interactive, with significant operator activity required to overlay the marked maps and displayed image data, and to select SCPs and/or RCPs. In this process the CP library entries are created, which include video data chips (32 lines x 32 pixels) and a directory for each chip which gives relevant information about the chip. There are two basically similar, but operationally somewhat different, modes in the control point generation process, depending on whether candidate CPs were selected for the scene being processed. If no candidate CPs are available, then no overlays using the ZTS are required, and no map data is used to geometrically correct the scene. All that is required is the selection of RCPs or SCPs from the zones, which is also the last step of the interactive session in the case where candidate CPs are available. The following paragraphs discuss the more typical case where candidate CPs were selected and digitized.

Figure 17-17 shows the basic flow for control point generation. The MIJ, PCE and MOU routines perform their standard functions of retrieving the PR from MMF-M, making it available to the work package (CPGEN in this case), and handling the feedback and preparing it for transfer to MMF-M.

Before reading the tape the operator will collect the marked maps, small scale maps for elevations for supplemental control points, the film images, and the inventory list of candidate CPs, and will take them to the control point area which houses the ZTS and Comtal for the string. The interactive session has two parts; processing the candidate CPs and selecting supplemental CPs. There are significant computer computations associated with each part.

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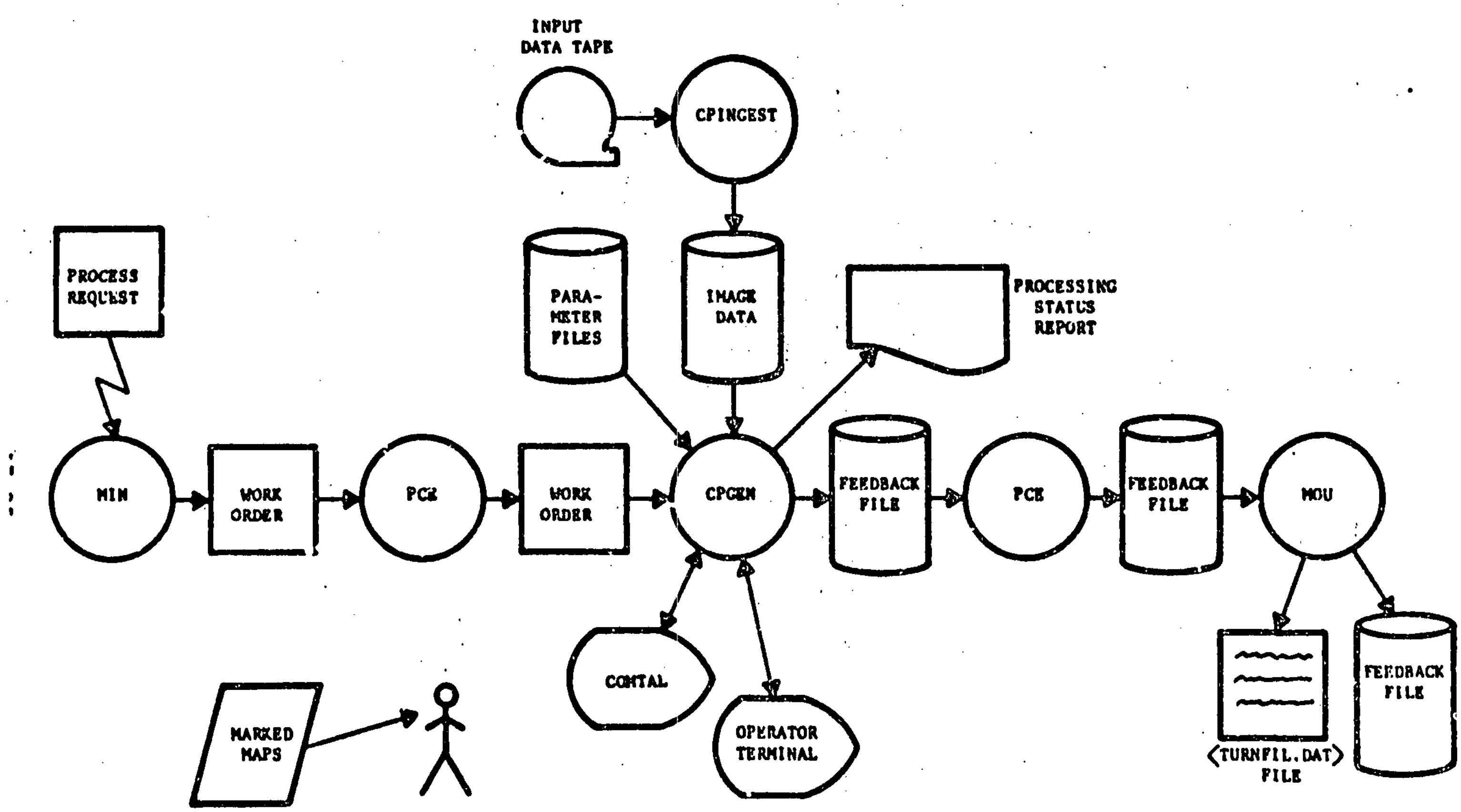

Figure 17-17. Control Point Generation Process

The processing of candidate CPs consists primarily of using the ZTS to overlay the map features with the actual imagery displayed on the Comtal and using the cursor to precisely identify the candidate CP location to the VAX. Depending on the scale of the map, the imagery on the Comtal will be automatically subsampled or supersampled, and the operator will use the zoom capability of the ZTS to adjust the map and the display to exactly the same scale. Once the candidate CP location has been designated using the cursor, the VAX performs several suitability tests on the CP neighborhood and on the 32 x 32 chip centered on the candidate CP and informs the operator of the results on the VT100 terminal display. Upon command, the exact 32 x 32 chip can be displayed for the operator's examination. At this time the operator decides whether to reject the chip for further consideration as a possible CP library entry. Figure 17-18 shows the display that the operator will see. In most cases the operator will not override the automatic evaluation results calculated by the VAX. If the point is not rejected, the operator will enter terrain type, feature code, feature density, and free form comments about the chip. This process is repeated until all the candidate CPs for the scene have been used. At this point the VAX takes the geodetic information and models the scene. If any geodetic points are found to be outliers, they are removed from the modeling calculations and are deleted from the list to be returned to MMF-M.

After the model has used the map information to determine geometric correction values for the scene, the next step is selection of SCPs as required. Usually

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```
STRING: NIPS <X>        *** CONTROL POINT GENERATION ***           DATE:DD-MM-YYYY
                    ATTRIBUTES AND AUTOCORRELATION RESULTS          TIME:HH:MM:SS

 CPC ATTRIBUTES          MASKED CPC ATTRIBUTES            CPN ATTRIBUTES
 ****************        ********************      ***************************
MEAN     = NNN.NN        MEAN     = NNN.NN                90% MAX = NNN
VARIANCE = NNN.NN        VARIANCE = NNN.NN                90% MIN = NNN
90% MAX  = NNN           90% MAX  = NNN            PIXELS ABOVE THRESHOLD = NN%
90% MIN  = NNN           90% MIN  = NNN

      AUTOCORRELATION VALUES                ACCEPTANCE TEST RESULTS
   ******************************          ****************************
   PEAK HEIGTH.............: U.NNN          <PASS/FAIL>    <TEST OFFSET>
   PEAK TO MEAN RATIO......: U.NNN          <PASS/FAIL>    <TEST OFFSET>
   MINIMUM CURVATURE.......: U.NNN          <PASS/FAIL>    <TEST OFFSET>
   SUBPIXEL LINE OFFSET....: N.NN           <PASS/FAIL>    <TEST OFFSET>
   SUBPIXEL PIXEL OFFSET...: N.NN           <PASS/FAIL>    <TEST OFFSET>
   AREA AT CUTOFF..........: U.NNN

         CHIP <DOES/DOES NOT> MEET ACCEPTANCE TESTS
```

Figure 17-18. Attributes and Autocorrelation Results Display

the goal is to get as close as possible to the ideal of 1 CP for each zone in the scene. SCP generation involves creating CPs without the use of maps (except for elevation information). The latitude and longitude assigned to each SCP are obtained using the geometric correction values determined above.

At this point the operator can select any zone and have the associated image data displayed on the Comtal. If the operator wishes to select an SCP, the cursor is placed on a feature the operator believes will make a usable CP and the VAX is informed via the VT100. The criteria listed in paragraph 17.4.3 are applicable to this selection process. As each point is designated, suitability tests (same as for GCPs) are performed on the neighborhood and the 32 x 32 chip and the operator is informed of the results on the VT100. The 32 x 32 chip is also dispalyed on the Comtal, magnified twice. The operator then decides whether to accept the chip, to reject the chip but try to find another in the zone, or to reject the chip and move on to another zone. If the point is not rejected, the operator will enter terrain type, feature code, feature density, elevation, and free form comments about the chip. This process is repeated until all the zones have been considered. The SCPs are then added to the GCPs and sent to the MMP for inclusion in the CP library. The summary report generated at the completion of this process is shown in Figure 17-19a and 17-19b.

Once the scene is completed the film and the processing summary report will be filed in the file cabinet. The marked maps will be returned to the library.

```
CPGS     CONTROL POINT GENERATION PROCESSING SUMMARY REPORT        PAGE 1 OF XX
                                                                   DATE:DD-MM-YYYY
                                                                    TIME:HH:MM:SS

WORK ORDER ID..............................: "RIP"<YYDDD><6 CHA SEQ NUM>"CPG01"
INPUT TAPE ID..............................: LRRTTTYDDDHH
SCENE ID...................................: RMPPPRRRDDDD
SCENE QUALITY...............(B1,B2,B3,B4)..: N,N,N,N


TOTAL NUMBER OF CPS IN WORK ORDER REQUEST: NN

TOTAL NUMBER OF CPS GENERATED.............: NN
                        1. GCPS...........: NN
                        2. SCPS...........: NN
                        3. RCPS...........: NN

TOTAL NUMBER OF CPS REJECTED..............: NN
     1. BAD DATA WITHIN CHIP..............: NN
     2. FAILED REGISTRATION...............: NN
     3. REJECTED BY THE OPERATOR..........: NN
     4. OUTSIDE ALLOWABLE ERROR ELLIPSE...: NN
     5. OUTSIDE BENCHMARK GRID............: NN

SHORT TERM PARAMETER FILE SPECIFICATION..: <48 CHA FILE SPECIFICATION>

ESTIMATED S/C PARAMETERS ERRORS (ESTIMATES GIVEN IN MICRO-RADIANS)

     PITCH BIAS...........................: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN
     YAW BIAS.............................: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN
     ROLL BIAS............................: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN
     ALONG TRACK RATE OF CHANGE...........: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN
     CROSS TRACK RATE OF CHANGE...........: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN
     RADIAL RATE OF CHANGE................: <"NOT ESTIMATED"> OR +-0.XXXXXE+-NN

                 CONTROL POINTS GENERATED IN EACH ZONE

            I----------+----------+----------+----------+----------I
            I   01:XX  I   02:XX  I   03:XX  I   04:XX  I   05:XX  I
            I----------+----------+----------+----------+----------I
            I   06:XX  I   07:XX  I   08:XX  I   09:XX  I   10:XX  I
            I----------+----------+----------+----------+----------I
            I   11:XX  I   12:XX  I   13:XX  I   14:XX  I   15:XX  I
            I----------+----------+----------+----------+----------I
            I   16:XX  I   17:XX  I   18:XX  I   19:XX  I   20:XX  I
            I----------+----------+----------+----------+----------I
            I   21:XX  I   22:XX  I   23:XX  I   24:XX  I   25:XX  I
            I----------+----------+----------+----------+----------I
```

Figure 17-19a. Control Point Generation Summary Report (Part 1)

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```
CPGS    CONTROL POINT GENERATION PROCESSING SUMMARY REPORT     PAGE 2 OF XX
                                                              DATE:DD-MM-YYYY
                                                               TIME:HH:MM:SS

CONTROL POINT # 01

CONTROL POINT STATUS........:

BAND NUMBER OF CONTROL POINT: N
DESCRIPTION.................: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
TYPE........................: X
SUN'S AZIMUTH ANGLE.........: NNN
SUN'S ELEVATION ANGLE.......: NN
SEASON......................: N
TERRAIN TYPE................: X
FEATURE CODE................: X
FEATURE DENSITY.............: N
OPERATOR IMPRESSIONS........: XXXXX

MAP ID......................: XXXXXXXXXXXXXXXXXXXX
MAP SCALE...................: 1:NNNNNN
MAP PROJECTION..............: X
CONTROL POINT LATITUDE......:  DD MM SS N/S
CONTROL POINT LONGITUDE.....: DDD MM SS E/W
CP ELEVATION................: +-NNNN METERS

AUTOCORRELATION VALUES:
   PRIMARY PEAK HEIGHT......: 0.NNN
   SECONDARY PEAK HEIGHT....: 0.NNN
   MINIMUM CURVATURE........: 0.NNN
   PEAK TO BACKGROUND RATIO.: NNN.NN
   AREA AT CUTOFF...........: 0.NNN

RADIANCE STATISTICS FOR THE CPC:
   MEAN.....................: NNN.NN
   VARIANCE.................: NNN.NNN
   90% MIN..................: NNN
   90% MAX..................: NNN

REGISTRATION OFFSETS:
  CAN CP LIN NUM (INP SPA)..: NNN OR "N/A"
  CAN CP PIX NUM (INP SPA)..: NNN OR "N/A"
  CAN CP LIN NUM (OUT SPA)..: NNN OR "N/A"
  CAN CP PIX NUM (OUT SPA)..: NNN OR "N/A"
  DES CP LIN NUM (INP SPA)..: NNN OR "N/A"
  DES CP PIX NUM (INP SPA)..: NNN OR "N/A"
  OFFSET IN INPUT PIXELS....: NNN OR "N/A"
  OFFSET IN INPUT LINES.....: NNN OR "N/A"

CONTROL POINT # 02

CONTROL POINT STATUS........:

BAND NUMBER OF CONTROL POINT: N
DESCRIPTION.................: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
TYPE........................: X
SUN'S AZIMUTH ANGLE.........: NNN
SUN'S ELEVATION ANGLE.......: NN
SEASON......................: N
TERRAIN TYPE................: X
FEATURE CODE................: X
FEATURE DENSITY.............: N
OPERATOR IMPRESSIONS........: XXXXX

MAP ID......................: XXXXXXXXXXXXXXXXXXXX
MAP SCALE...................: 1:NNNNNN
MAP PROJECTION..............: X
CONTROL POINT LATITUDE......:  DD MM SS N/S
CONTROL POINT LONGITUDE.....: DDD MM SS E/W
CP ELEVATION................: +-NNNN METERS

AUTOCORRELATION VALUES:
   PRIMARY PEAK HEIGHT......: 0.NNN
   SECONDARY PEAK HEIGHT....: 0.NNN
   MINIMUM CURVATURE........: 0.NNN
   PEAK TO BACKGROUND RATIO.: NNN.NN
   AREA AT CUTOFF...........: 0.NNN

RADIANCE STATISTICS FOR THE CPC:
   MEAN.....................: NNN.NN
   VARIANCE.................: NNN.NNN
   90% MIN..................: NNN
   90% MAX..................: NNN

REGISTRATION OFFSETS:
  CAN CP LIN NUM (INP SPA)..: NNN OR "N/A"
  CAN CP PIX NUM (INP SPA)..: NNN OR "N/A"
  CAN CP LIN NUM (OUT SPA)..: NNN OR "N/A"
  CAN CP PIX NUM (OUT SPA)..: NNN OR "N/A"
  DES CP LIN NUM (INP SPA)..: NNN OR "N/A"
  DES CP PIX NUM (INP SPA)..: NNN OR "N/A"
  OFFSET IN INPUT PIXELS....: NNN OR "N/A"
  OFFSET IN INPUT LINES.....: NNN OR "N/A"
```


Figure 17-19b. Control Point [illegible]eration Summary Report (Part 2)

17.4.8 CONTROL POINT GENERATION COMPLETION

The control point generation completion process completes the control point generation part of the CPP function by retrieving the PR feedback from MIPS and creating the control point library entries for those scenes successfully processed. The library contains the 32 pixel x 32 line "chips" and a directory for each chip. For those points entering the library which originally were candidate CPs, the library directory is created by merging PR feedback and candidate control point file data. For RCPs and SCPS, the directory is generated solely from PR feedback data. Consequently, some directory entries are blank filled in those cases.

Figure 17-20 shows the basic flow for control point generation completion. An example of the processing summary report generated by the GACPCU routine is shown in Figure 17-21.

17.4.9 FAILED CONTROL POINT EVALUATION

The failed control point evaluation process is a standalone activity which permits an operator, usually a control point technician or an image analyst, to examine those control points which were rejected for any reason in the MSS archive generation function. Both a Comtal display and a VT100 are required for this process, together with a magnetic tape drive. The information about the rejected CPs is put on a CCT following archive generation processing (refer to Section 10.4 for details). This is a highly manual, interactive process with no mathematical computations; the software only transfers data. The operator uses the VT100 to control the process and observes the rejected CP chip, its associated neighborhood, and information about the chip and the correlation

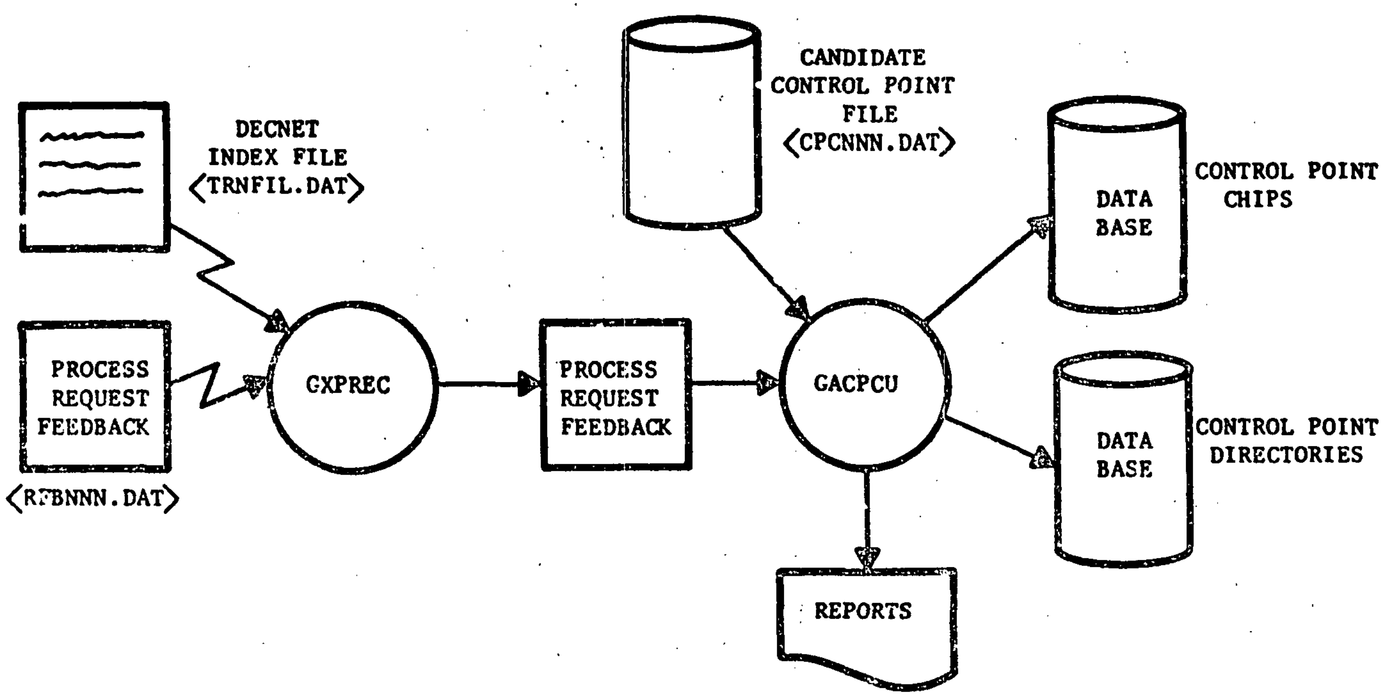

Figure 17-20. Control Point Generation Completion Process

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LISTING : GA1690 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PAGE : 1
SUBSYSTEM : GMS GODDARD SPACE FLIGHT CENTER DATE : 23-OCT-81
LANDSAT MISSION MANAGEMENT FACILITY TIME : 09:03

PROCESSING MODE: MANUAL CONTROL POINT LIBRARY BUILD FEEDBACK SUMMARY REPORT DATABASE SENSOR TYPE : MSS

FEEDBACK FILE	CORRESPONDING PROC. REQUEST FILE	TYPE	SCENES REQUEST	SCENES PROC'D	INTERNAL SCENE ID	CP REQ	CP PROC'D	UNSOLICITED CP	CONTROL POINT ID
RFB001	RPR001	LG	01	01	4M0340270100	21	21	00	4M0340271G01001
									4M0340271G02002
									4M0340271G03003
									4M0340271G04004
									4M0340271G05005
									4M0340271G06006
									4M0340271G07007
									4M0340271G08008
									4M0340271G09009
									4M0340271G10010
									4M0340271G11011
									4M0340271G12012
									4M0340271G13013
									4M0340271G14014
									4M0340271G15015
									4M0340271G16016
									4M0340271G17017
									4M0340271G18018
									4M0340271G19019
									4M0340271G20020
									4M0340271G21021

INFORMATION: FILE RFB002 NOT PROCESSED PER OPERATOR REQUEST.

RFB003	RPR003	LG	01	01	4M0500210102	18	18	00	4M0500213G01008
									4M0500213G02009
									4M0500213G03010
									4M0500213G04011
									4M0500213G05012
									4M0500213G06013
									4M0500213G07014
									4M0500213G08015
									4M0500213G09016
									4M0500213G10017
									4M0500213G11018
									4M0500213G12019
									4M0500213G13020
									4M0500213G14021
									4M0500213G15022
									4M0500213G16023
									4M0500213G17024
									4M0500213G18025

INFORMATION: FILE RFB004 NOT PROCESSED PER OPERATOR REQUEST.

Figure 17-21. Library Build Feedback Summary

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attempt on the Comtal. This process is one of the standard menu selections of the MIPS main menu.

Figure 17-22 shows the basic flow for failed control point evaluation. This is one of the few processes for which no summary report is generated. The interactive session normally proceeds as follows:

a. The operator logs onto a MIPS string
b. The MIPS Main Menu is displayed and the operator selects "FA"
c. The control point fail main menu is displayed and the operator indicates the tape drive that will be used and the Comtal that will be used (using the "AS" command)
d. The CCT is mounted and the tape header file is read
e. The operator asks to see the list of scenes on the tape using the "DI" command and the list is displayed
f. The operator selects a scene using the "LI" command and gets a list of all failed CPs in that scene
g. The operator selects a CP to examine by using the "CH" command.

Figure 17-23 shows what the Comtal display will look like.

The normal uses of this process are two:

a. The CP technicians will attempt to learn which types of points seem to fail a large percentage of the time, so that they will avoid such areas when selecting SCPs/RCPs, or when choosing to accept a GCP
b. The image analysts will view selected failures to maintain confidence

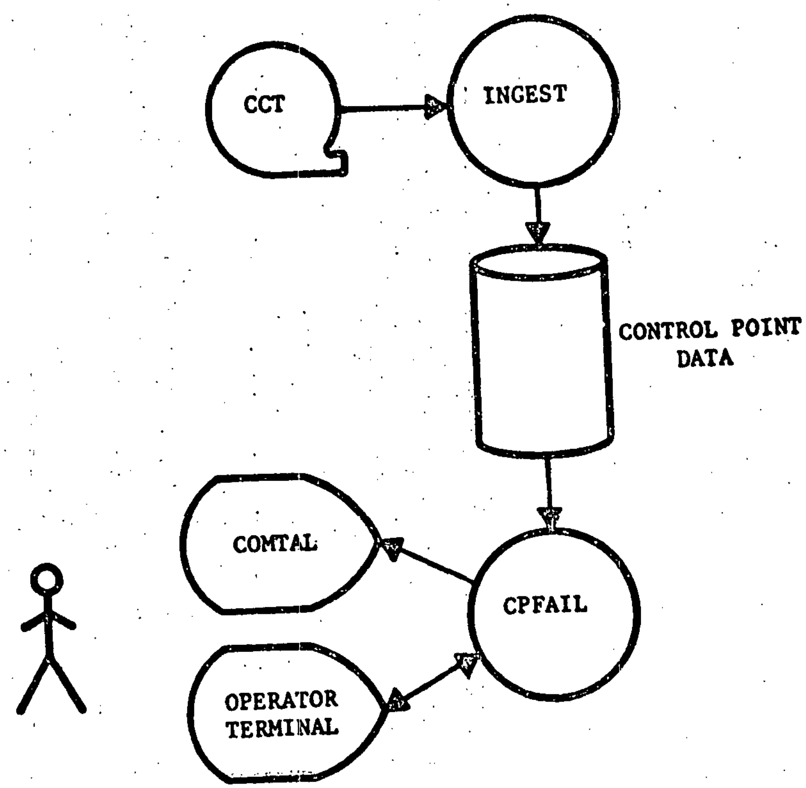

Figure 17-22. Failed Control Point Evaluation Process

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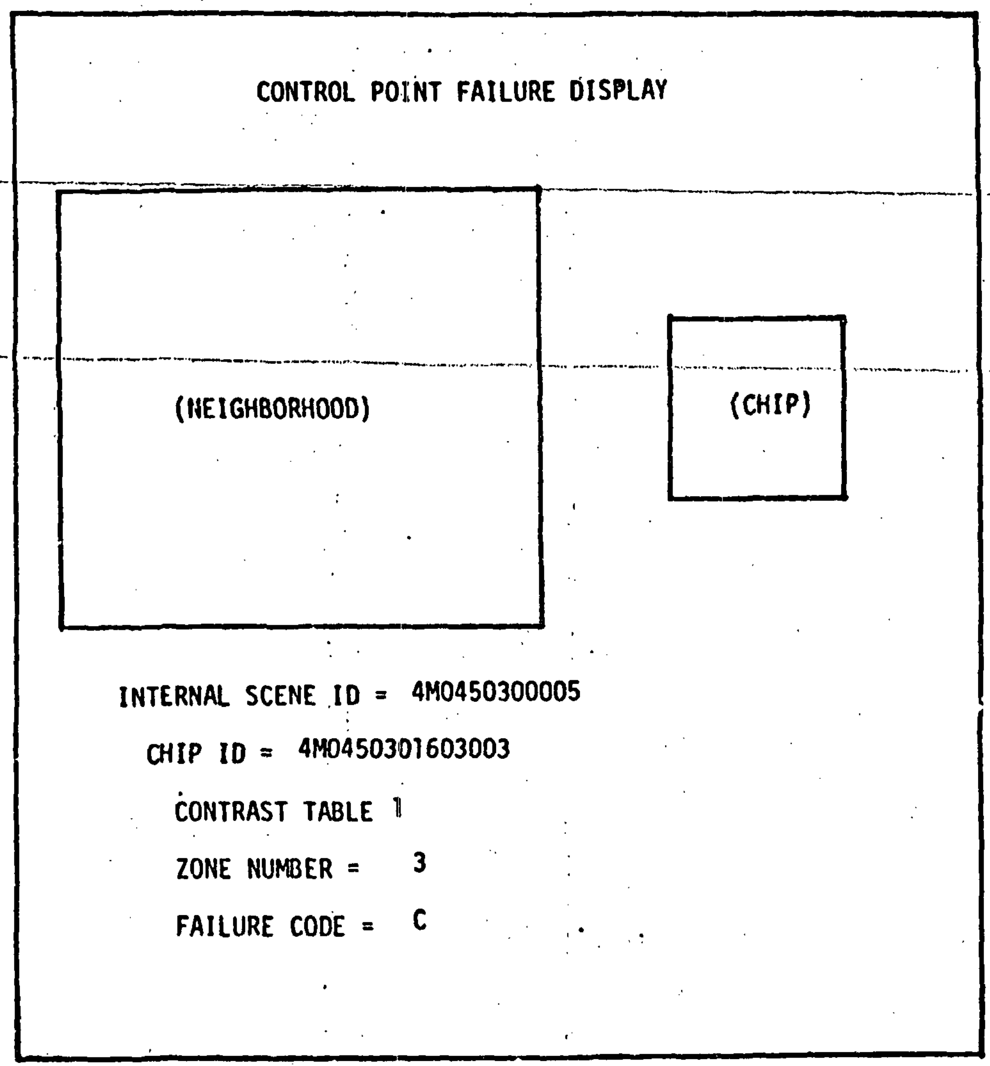

Figure 17-23. CP Failure Display

in the system and to look for subtle problems which could be affecting product geometric quality because of CP rejections.

17.4.10 CONTROL POINT DELETE

The control point delete process is a standalone activity that permits all records of a control point to be removed from the CP library. This process is driven by a list generated by image analysts and/or CP technicians when evaluating control points, either in the CP failure evaluation process or in the image evaluation function. To run this process, an interactive terminal (VT100/VT78) on the MMP-M is needed for the operator to enter the information.

Figure 17-24 shows the basic flow for control point delete. An example of the interactive session questions, answers, and screen displays is given in Figure 17-25. The processing summary report is shown in Figure 17-26.

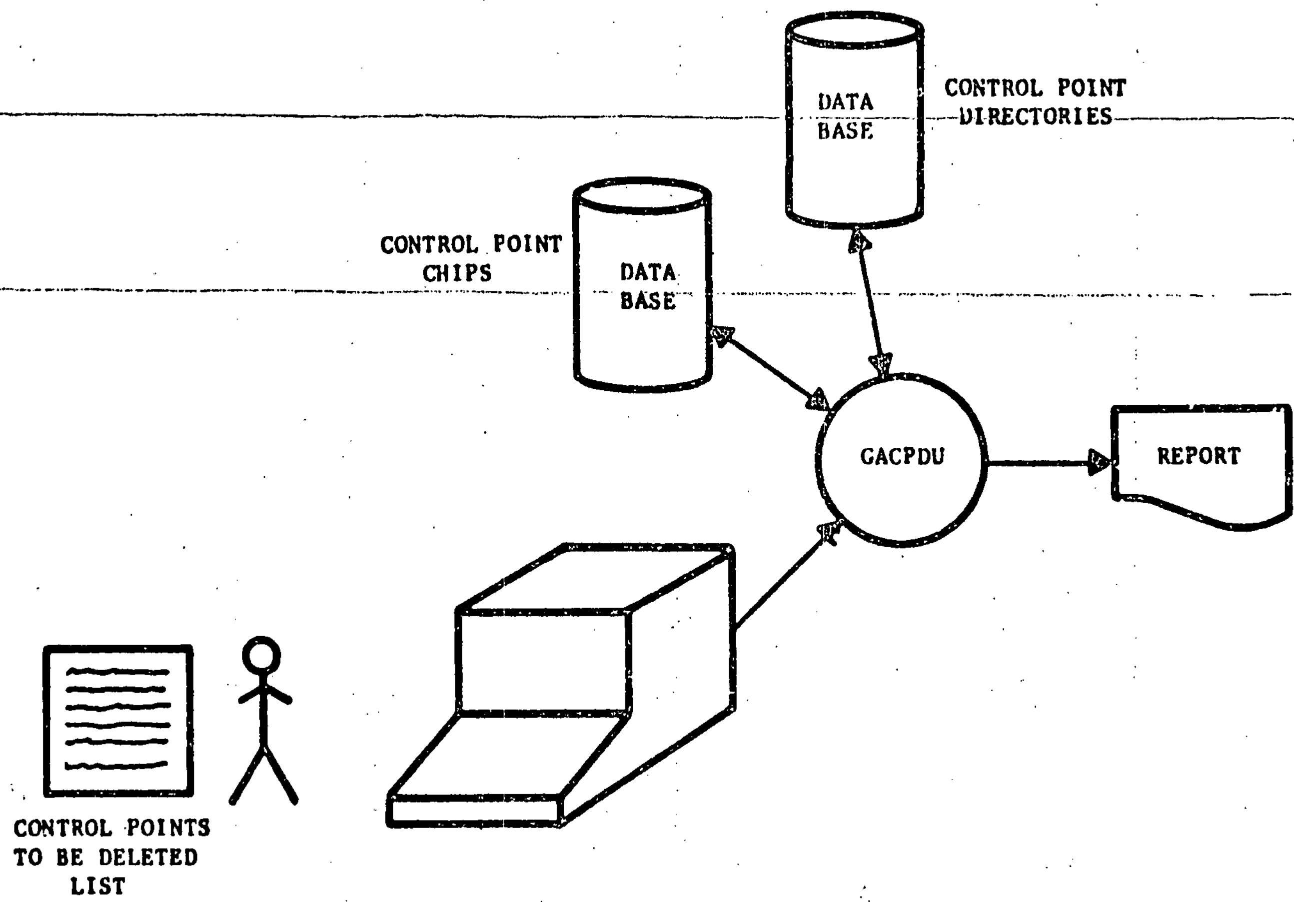

Figure 17-24. Control Point Delete Process

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```
GACPDU            GACPDU USER INTERACTION LOG
GACPDU     DO YOU WISH TO CONTINUE PROCESSING GACPDU (Y/N) ?
GACPDU     Y
GACPDU     ENTER MISSION NUMBER. VALID ENTRIES ARE 1,2,3,4 OR 5.
GACPDU
GACPDU     4
GACPDU     ENTER SENSOR TYPE. VALID ENTRIES ARE T AND M
GACPDU
GACPDU     M
GACPDU     ENTER PATH-ROW DATA (PPPRRR) VALID PATH: 001 THRU 233. VALID ROW: 001 THRU 248
GACPDU
GACPDU     034028
GACPDU     INFORMATION: THE CONTROL POINT ID IS : 4M0340282C01011
GACPDU     INFORMATION: THE INTERNAL SCENE ID IS : 4M0340280101
GACPDU     INFORMATION: THE NASA SCENE ID IS:   4010112021
GACPDU     INFORMATION: THE DAY TIME ENTERED IS : 81294061047
GACPDU     INFORMATION: THE LATITUDE IS : N3811159
GACPDU     INFORMATION: THE LONGITUDE IS : W13409442
GACPDU     INFORMATION: THE NUMBER OF TIMES USED IS :    0
GACPDU     INFORMATION: THE NUMBER OF TIMES USED UNSUCCESSFULLY IS :    0
GACPDU     INFORMATION: THE USAGE FLAG IN THE MCP RECORD IS S.
GACPDU     INFORMATION: THE CHIP DESCRIPTION IS:   AIRPORT
GACPDU
GACPDU     DO YOU WANT TO HAVE THIS CONTROL POINT'S DIRECTORY AND
GACPDU       VIDEO INFORMATION DELETED FROM THE CONTROL POINT LIBRARY (Y/N)?
GACPDU     Y
GACPDU     ARE YOU SURE YOU WANT TO HAVE THE CONTROL POINTS DIRECTORY/VIDEO INFO
GACPDU       DELETED FROM THE CONTROL POINT LIBRARY (Y/N)?
GACPDU     Y
GACPDU
GACPDU     INFO: DIRECTORY AND VIDEO INFO WILL BE DELETED FOR CTL PNT 4M0340282C01011
GACPDU
GACPDU     INFORMATION: THE CONTROL POINT ID IS : 4M0340282C02012
GACPDU     INFORMATION: THE INTERNAL SCENE ID IS : 4M0340280101
GACPDU     INFORMATION: THE NASA SCENE ID IS:   4010112021
GACPDU     INFORMATION: THE DAY TIME ENTERED IS : 81294061047
GACPDU     INFORMATION: THE LATITUDE IS : N3811161
GACPDU     INFORMATION: THE LONGITUDE IS : W13409512
GACPDU     INFORMATION: THE NUMBER OF TIMES USED IS :    0
GACPDU     INFORMATION: THE NUMBER OF TIMES USED UNSUCCESSFULLY IS :    0
GACPDU     INFORMATION: THE USAGE FLAG IN THE MCP RECORD IS S.
GACPDU     INFORMATION: THE CHIP DESCRIPTION IS:   COAL YARD
GACPDU
GACPDU     DO YOU WANT TO HAVE THIS CONTROL POINT'S DIRECTORY AND
GACPDU       VIDEO INFORMATION DELETED FROM THE CONTROL POINT LIBRARY (Y/N)?
GACPDU     N
GACPDU
GACPDU     DO YOU WANT TO CONTINUE PROCESSING THIS REQUEST (Y/N)?
GACPDU     Y
```

Figure 17-25. GACPDU User Interaction Log

LISTING : GA1280 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PAGE : 1
SUBSYSTEM : GPS GODDARD SPACE FLIGHT CENTER DATE : 23-OCT-81
LANDSAT MISSION MANAGEMENT FACILITY TIME : 10:13

PROCESSING MODE: MANUAL CONTROL POINT LIBRARY DELETE PROCESSING SUMMARY DATA BASE SENSOR TYPE: MSS

MISSION	SENSOR	PATH	ROW	CONTROL POINT ID	NASA SCENE ID	LATITUDE	LONGITUDE	DATIME ENTERED	NUMBER OF TIMES USED	NUMBER OF TIMES UNSUCCESSFUL	DIR/VIDEO INFO DELETED
4	M	034	028	4M0340282G01011	4010112021	N3811159	W13409442	81296094608	0	0	Y
4	M	034	028	4M0340282G02012	4010112021	N3811161	W13409512	81296094608	0	0	N
4	M	034	028	4M0340282G03013	4010112021	N3811193	W13410273	81296094608	0	0	Y
4	M	034	028	4M0340282G04014	4010112021	N3811194	W13410392	81296094608	0	0	N
4	M	050	022	4M0500224G01032	4010312022	N4612060	W14619173	81296094608	0	0	Y
4	M	050	022	4M0500224G02033	4010312022	N4612072	W14619185	81296094608	0	0	N
4	M	050	022	4M0500224G03034	4010312022	N4612104	W14619228	81296094608	0	0	Y
4	M	050	022	4M0500224G04035	4010312022	N4612149	W14619242	81296094608	0	0	N
4	M	072	013	4M0720133G01001	4010611054	N6501011	W16601011	81296094045	0	0	N
4	M	072	013	4M0720133G02002	4010611054	N6502022	W16602022	81296094045	0	0	Y
4	M	072	013	4M0720133G03003	4010611054	N6503033	W16603033	81296094045	0	0	Y
4	M	072	013	4M0720133G04004	4010611054	N6504044	W16604044	81296094045	0	0	N

INFORMATION: THE NUMBER OF CONTROL POINT RECORDS DELETED IS: 6

INFORMATION: OPERATOR ENDED GACPDU PROCESSING.
GACPDU-END OF PROCESSING

Figure 17-26. Control Point Delete Processing Summary

SECTION 18

IMAGE SYSTEM EVALUATION

18.1 ENVIRONMENT/RESOURCE

The Imaging System Evaluation function is a manually-intensive, Ground Segment-wide analysis activity, utilizing both standard production outputs from, and special purpose capabilities of, most of the components of the Landsat-D data processing system. In particular, extensive use is made of the PEPG software on the MIPS VAX 11/780 and the data base reporting capabilities of the operating system on the MCF-M DEC2050.

18.2 OVERVIEW/BACKGROUND

Imaging System Evaluation is part of a large performance evaluation effort that covers both the Flight Segment and the Ground Segment. Here we will consider only the parts of this effort that are performed routinely by the Image Analysts in the QA organization, with assistance from the DBMS Specialist, Control Point Technicians, QA technicians, and others. The Imaging Systems Performance Evaluation Plan (81SDS4230) and the Flight System Performance Evaluation Plan (82SDS4214) present all aspects of the evaluation efforts, which include those covered here and other more specific, special, or one-time-only activities. The majority of the Imaging System Evaluation function involves monitoring system performance, identifying anomalies, gathering information and generating long-term trend plots, and determining when changes in system parameters are required and what the new values should be.

18.3 FUNCTION DESCRIPTION

For simplicity, the Imaging Systems Evaluation function will be considered as three separate processes: 1) In-line evaluations, where production reports and visual examinations are utilized to detect system anomalies, observe short-term system trends, evaluate processing consistency between various functions, and select data for further detailed examination; 2) Product analysis, where standard user products are evaluated and special reports are created that document system performance; and 3) Long-term evaluations, where information stored in the QA and MMF data base is used to create trend plots of key parameters and to track the performance of key elements of the Ground Segment. In actual practice, these three processes are tightly integrated since outputs from one may be valuable or essential inputs to another. The time frames for these three activities form an important distinction between them. In-line evaluations are normally performed from real-time to 2-3 days after products have been generated. Product analysis is normally performed from several hours to one week after products have been generated, and long-term evaluations are normally performed from one week to one month after products have been generated.

Figure 18-1 gives a high level view of this function and shows how the various parts interact. Table 18-1 lists the generic inputs and outputs of this function.

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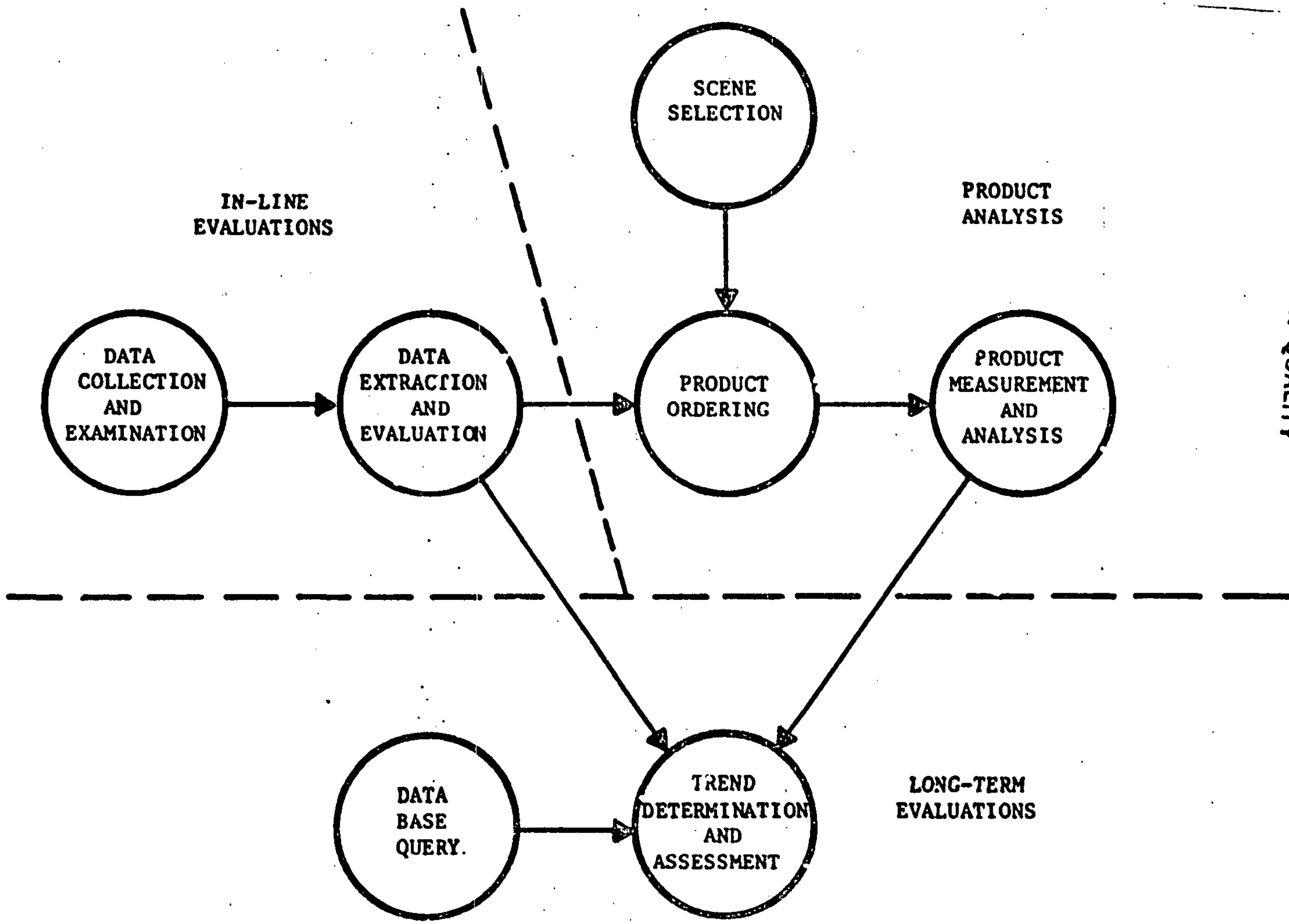

Figure 18-1. Imaging System Evaluation Function

Table 18-1. Generic Inputs and Outputs for Imaging System Evaluation

Inputs

Hardcopy Summary Reports - From QA Data Base

System Products - Tape

Film

Evaluation Reports

MMF-M Data Base Contents - HDT Quality

Image Quality

Outputs

System Anomalies

Formal Evaluation Reports

Parameter Updates

Recommendations to Improve System Performance

18.4 PROCESS OPERATIONS

The two Image Anaysts will spend a large fraction of their time performing the Imaging System Evaluation function. On the average, one CCT-PM, one F241-PM, two F241-AM, and two radiance evaluation reports will be requested per day from MIPS. This will require about one hour of computer resources. Accessing the MMF-M data base could require several hours per week, but this would not be dedicated time. At present the routines needed to do the data base access and analysis have not been created and will require support from the DBMS specialist and perhaps other software personnel.

18.4.1 IN-LINE EVALUATIONS

In-line evaluations is a supporting function of Quality Assurance, utilizing most of the same inputs. The major difference is the level of detail and the removal from the tight time constraints imposed on QA activities. The goal is to detect subtle system anomalies or undesirable trends, so that action can be taken before significant processing problems occur (either massive rework, or subpar products being shipped). All input data will be archived for possible future reference. Because of the large volume of data available, only a sample can be examined in detail; however, that is not felt to be a serious limitation since the items of interest are expected to be observable in most data sets. The critical element is to keep relatively current with production and to examine a variety of parameters from each data set (on an R-tape or A-tape basis, for example).

This process can be broken into two parts: the general collection and examination of the data, and the extraction of specific items from the data for known evaluations or future uses.

The inputs for this process are received after QA has completed their evaluation, although, since the Image Analysts are part of the QA organization, they could also perform those evaluations in some cases. The specific inputs are:

a. Processing Summary Reports
   1. PCP Phase 1
   2. PCP Phase 2
   3. MSS Archive Generation
   4. PEPG
b. QA Reports
   1. PCP Phase 1
   2. PCP Phase 2
   3. MSS Archive Generation
c. Line Test Results
   1. Payload Correction Processing
   2. MSS Archive Generation
   3. Control Point Processing
   4. DRRTS
d. Verbal Reports
e. On-Line Logs

f. Image Examination Results

1. Moving Window Display
2. Quick Look Monitor
3. MAG On-Line Display During Input and Output
4. Manual Cloud Cover Assessment
5. QA Film Images
6. PEFG On-Line Display During Input
7. PEPG Comtal Display (COMDIS utility).

18.4.2 PRODUCT ANALYSIS

The product analysis process is concerned with the actual processing system performance, as reflected in the products being sent to the users. This is accomplished by making detailed checks of product acceptability, primarily in the areas of geometric and radiometric performance, by gathering statistics on long-term system performance trends in these areas. The three major parts of this process are: 1) using the CPFAIL routine in the CPP function (paragraph 17.4.9) to examine failed control points; 2) using the RADEVAL routine in PEPG to do detailed radiometric analysis of selected scenes; and 3) careful examination of standard and special products generated for each acquisition of a few U.S. "test sites," which will be monitored for changes, both large and small. In the last item the same areas are periodically (every 16 days) examined. Since the same area is always examined and the same analyses are performed, the results should be predictable; thus, small effects not otherwise seen will be apparent. Obviously, changes in sun angle, cloud cover, etc., will mean that the results may not be exactly the same.

Figure 18-1 shows the basic flow in product analysis. The scene selection subprocess is concerned with identifying the scenes and products desired. The scene selection for CPFAIL and RADEVAL will often be a byproduct of examining the reports in the in-line evaluations function. For the test sites, all acquisitions will be of interest and the same products will always be requested, the only exception being when the cloud cover is extremely high so that no useful analysis is probable. The test sites are in areas where cloud cover is normally quite low. The standard products will vary for the different sites; for geometric test sites, CCT-PM, F241-AM and F241-PM will be needed, while for radiometric test sites, only CCT-AM and radiance evaluation reports will be needed. Some areas could be both radiometric and geometric test sites. The following are expected to be the test sites used:

a. Geometric

   1. Tulsa, Oklahoma
   2. San Joaquin, California
   3. Phoenix, Arizona
   4. Central Colorado
   5. Southern New Mexico.

b. Radiometric

   1. Baja, California
   2. White Sands, New Mexico.

The product ordering will be handled by production control personnel using the standard MMF-M procedures, based on inputs provided to them by the Image Analysts. Once the actual products are generated, they will be delivered to the Image Analysts by Production Control personnel following the normal procedures.

The Product Management and Analysis subfunction consists of: 1) examining failed control points using the CPFAIL utility and correlating the observations with the data on MAG QA reports; 2) examining the radiance evaluation report, which gives various measures of sensor striping and associated data; and 3) measuring the 241 mm film images using the Mann Comparator in Building 23 to see how accurately known locations were positioned.

18.4.3 *LONG-TERM EVALUATIONS*

The long-term evaluations process is a completely offline activity that utilizes data gathered for QA purposes, data sent to MMF-M as part of processing feedback, and the data collected during the in-line evaluations and product analysis processes. This data is analyzed to provide long-term trend information that will be used to update system parameters as necessary. The two areas that will be routinely evaluated are: 1) tape drive performance, and 2) radiometric correction constants (calibration nominals, M&A values). A third area of considerable interest is control point selection techniques. Trend plots will be kept on sensor striping levels, measured geometric accuracy, line test error counts, and video data fault counts at various points in the processing system.

SECTION 19

INVENTORY CONTROL PLAN

19.1 ENVIRONMENT/RESOURCES

Inventory control processing uses the DEC 2050 system in the MMF-M. Inventory control programs are part of the request support subsystem (RSS) package as defined in Package Design Specification for Inventory Control (LSD-MMF-PKG-2003). Refer to Figure 19-1.

All ADP systems required to perform inventory control processes are located in the second floor computer room of GSFC, Building 28. A DEC VT100 terminal located in the stockroom is normally used to update the inventory control program; however, any terminal interactive with the DEC2050 in the MMF-M may be used. A high level block diagram of the MMF-M hardware is shown in Figure 19-2.

19.2 OVERVIEW/BACKGROUND

The Ground Segment provides a GAO compatible inventory control system for operations management of an estimated 6000 line item inventory. All spares, consumables, office supplies, and one-time-order-items are covered by the inventory control system. The inventory control system software allows logistics section personnel to:

a. Track physical inventory

b. Track outstanding purchase orders

c. Flag overdue purchase orders

d. Suggest items for reorder

e. Track spares usage by part number and by user.

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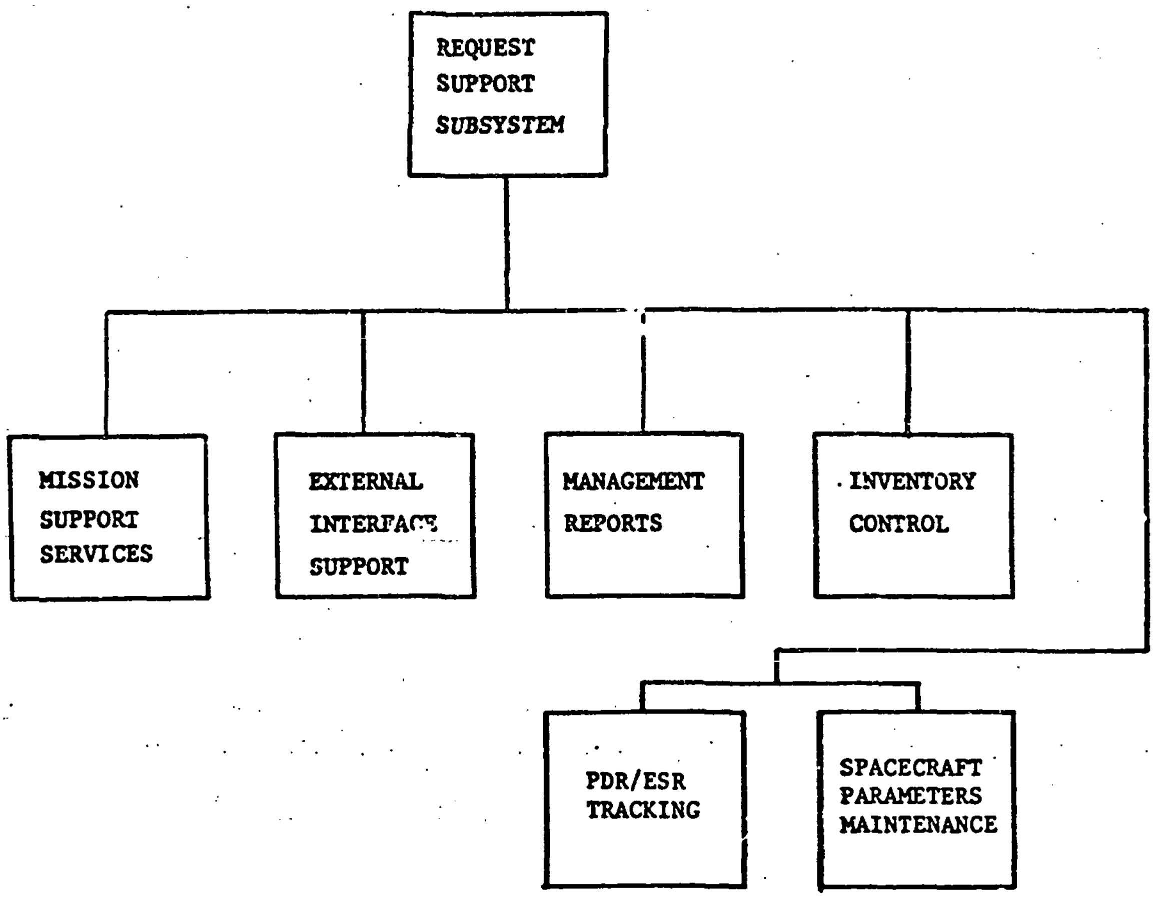

Figure 19-1. RSS Functions

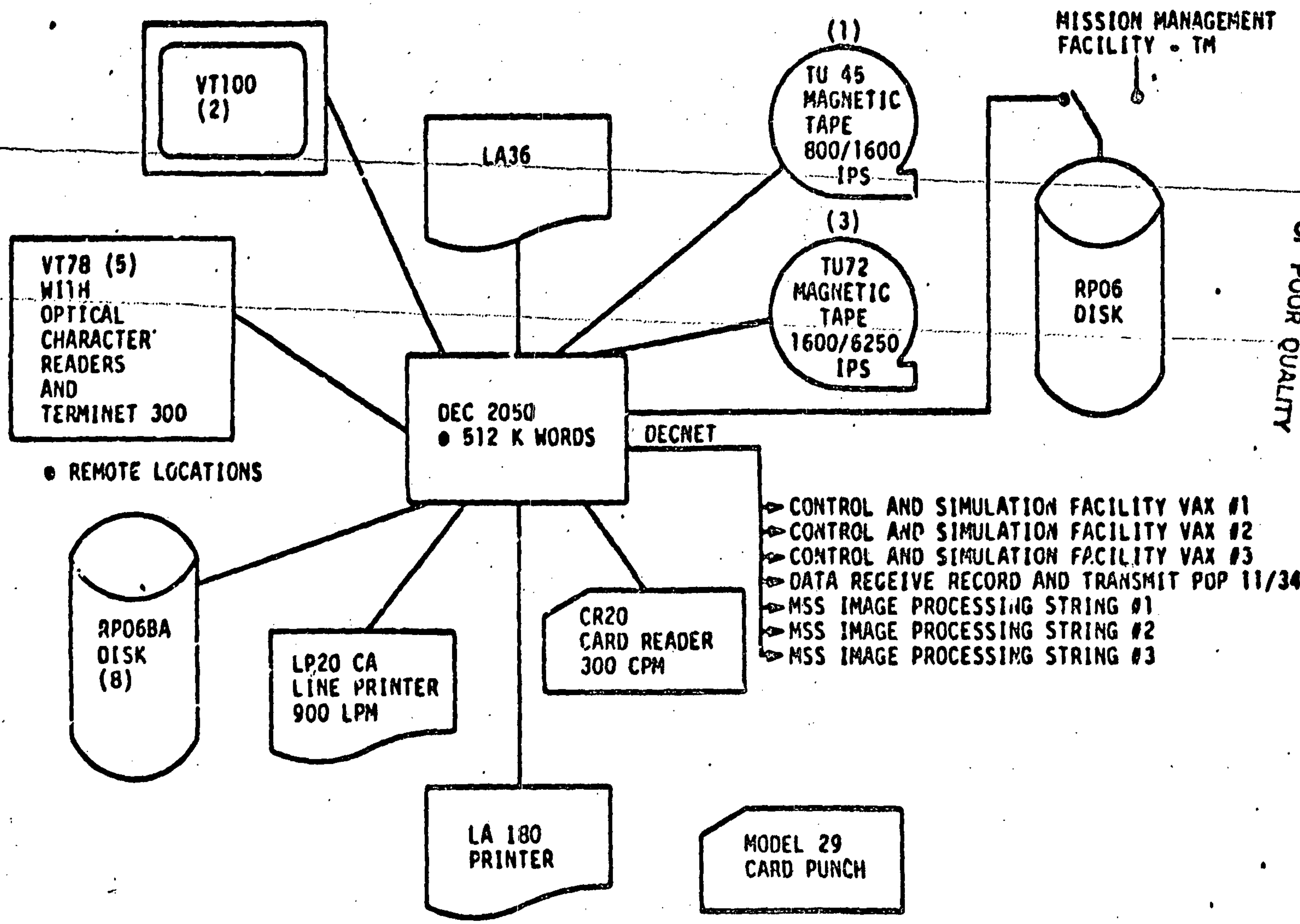

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Figure 19-2, Hardware Subsystem of the MMF-M

The logistics section, under the production control manager, is responsible for the operation of the inventory control system. The logistics supervisor, with the assistance of two stock clerks, performs all inventory control functions.

19.2.1 LOGISTICS SUPERVISOR

The logistics supervisor is responsible for:

a. Supervising daily operations of stock room and performance of stock clerks

b. Interface with expendables resupply sources regarding replenishment deliveries

c. Utilizing inventory control system to manage spares and consumable inventory.

19.2.2 STOCK CLERKS

The stock clerks are responsible for:

a. Issuing supplies and spare parts as requested/authorized

b. Restocking inventory deliveries

c. Maintaining supply and spare parts disposition and status logs

d. Generating and entering inventory control system inputs

e. Receiving and acting on inventory control system outputs.

The logistics supervisor and stock clerks are day personnel, working from 0800 to 1700, five days a week.

19.3 FUNCTION DESCRIPTION

19.3.1 INITIAL SET UP

Prior to activation of the inventory control system, the following preliminary tasks must be accomplished by:

a. Logistics Branch

1. Physical inventory of spares, consumables, office supplies and one-time order items on hand
2. Assignment of a six character part number to each set of identical pieces
3. Entry of part description, purchase order and inventory user information. Inventory control entry and update program (RIENUP) is described in paragraph 19.3.3

b. Section managers

1. Designation, in writing, of personnel authorized to draw parts (inventory user).

19.3.2 DAILY STOCKROOM OPERATION

The stockroom is open 0800-1700 for normal parts issue. Only those people designated in writing by section managers are authorized to draw parts. From 1701 to 0759 the mission supervisor is responsible for drawing parts and making issue log entries.

Office supplies are issued on Monday, Wednesday and Friday from 0800 to 1200.

Authorized users are tracked by a unique five-digit user ID number. The inventory control data base is updated weekly (normally, Wednesday afternoon) from the material request, receipt, and withdrawal logs maintained by logistics section personnel.

19.3.3 INVENTORY CONTROL ENTRY AND UPDATE PROGRAM (RIENUP)

The RIENUP program (Figure 19-3) allows establishment of the initial inventory control data base. The operator selects, from a menu screen, the types of records to be entered or modified. The menu screen lists seven record types:

a. Part Description Screen

b. Purchase Order Screen

c. Receipt History Screen

d. Withdraw History Screen

e. Inventory User Screen

f. Spares Returned Screen

g. Withdrawal Error Correction Screen

Each record prompts for required information and reports on the success of various actions it initiates. Figure 19-4 shows inventory control schema.

19.3.3.1 Part Description Record

The part description record is the first record to be entered for a new item. Entry of a new record has no effect on existing records. Each field is checked for correctness by Traffic-20 and/or RIENUP. A part description must exist before any other records may be entered. The part description record is accessed by the six-character "part number."

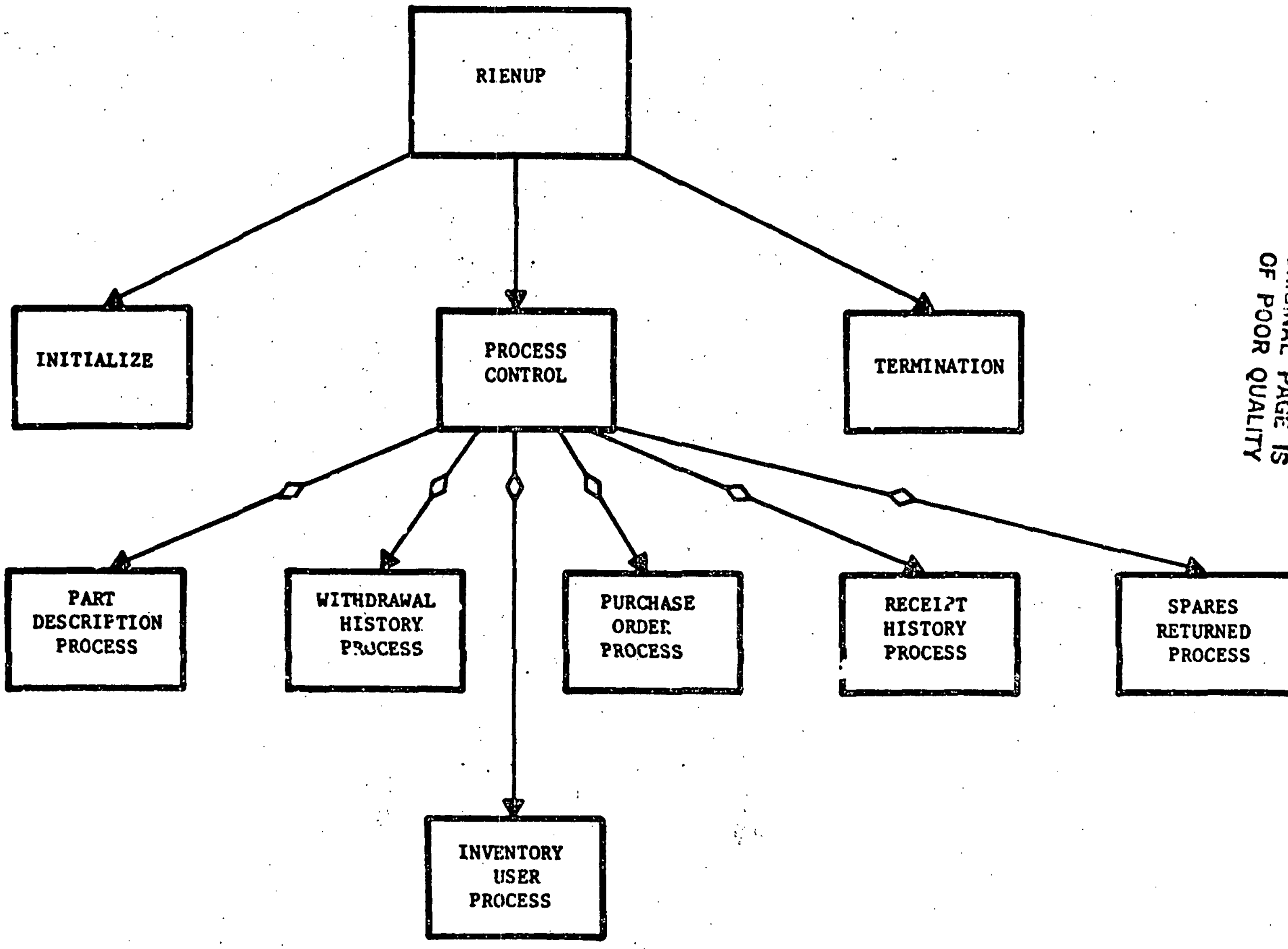

Figure 19-3. RIENUP Structure Chart

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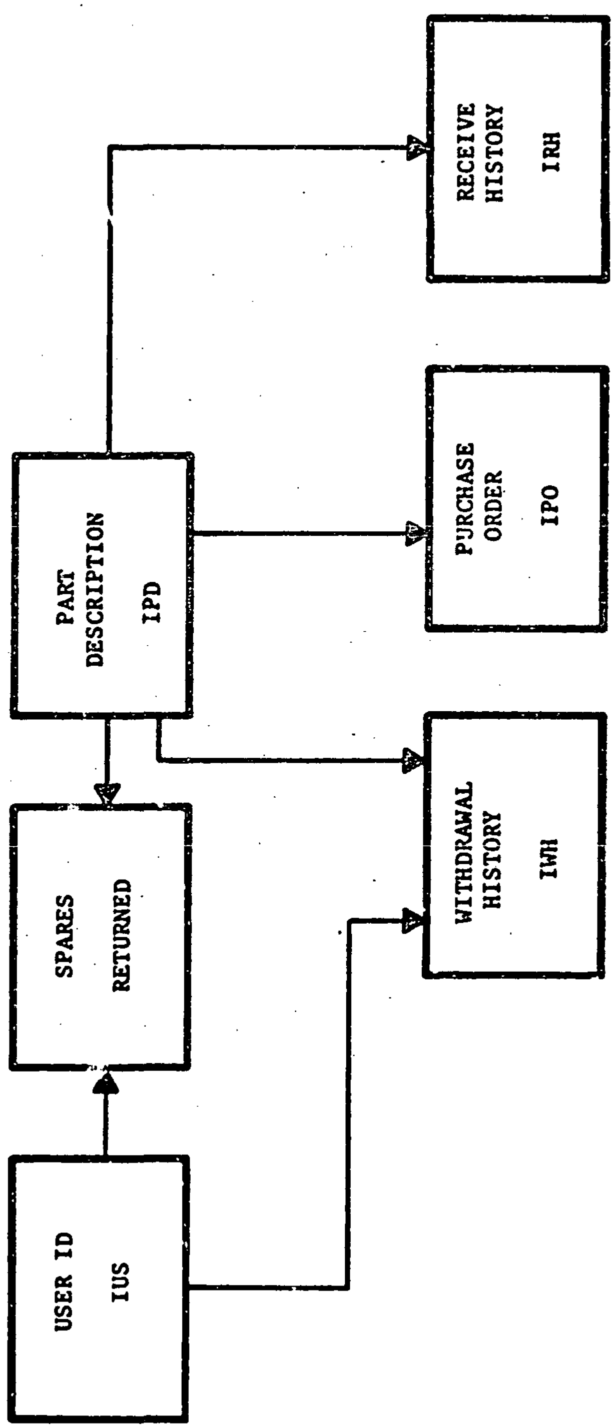

Figure 19-4. Inventory Control Schema

19.3.3.2 Inventory User Record

The inventory user record is a list of five character user identification numbers of those personnel authorized to draw parts. User ID numbers are assigned by the logistics supervisor. The inventory user record should be the second part of a new item entry. User records may be added at any time. Entry of the inventory user record does not affect any other record; however, it must exist together with the part description record before a withdrawal history may be entered.

19.3.3.3 Purchase Order Record

The purchase order record contains the order information maintained by RIENUP. The part description record must exist before a purchase order can be created. Entry of this record affects the part description record. The purchase order record is the residence of the manufacturer's part number and federal stock number. The purchase order record is accessed by purchase order number and line item number.

19.3.3.4 Receipt History Record

The receipt history record contains entries of stock received into the inventory data base. This record requires that a part description and a purchase order record exist. The record is stored in ascending order by receipt date. This is done to cause issues of stock to be first-in/first-out (FIFO). Entry of this record affects the balances on the part description record and the purchase order record.

19.3.3.5 Withdrawal History Record

The withdrawal history record tracks withdrawals from the inventory. It may not be entered until part description, inventory user, and purchase order records exist. Withdrawal is accomplished in the same order as the receipts to maintain the first-in/first-out (FIFO) accounting practice. Access is by part number.

19.3.3.6 Spares Returned Record

The spares returned record allows tracking of spares by serial number. Entry of this record does not affect any other record; however, the part description and inventory user record must exist before the record may be stored in the data base. Access to the record is by part serial number.

19.3.3.7 Withdrawal Error Correction Record

The withdrawal error correction record allows correction of the withdrawal history record when an erroneous amount exceeding the amount actually withdrawn is entered. This screen allows the operator to subtract an appropriate amount from the excess amount to accurately reflect the transaction. Access is by part number.

19.4 PROCESS OPERATIONS

19.4.1 RIENUP ACCESS PROCEDURES

To access RIENUP, the operator must log in on the terminal with the correct password. Program security is provided by restricting access to the terminal

and by limiting dissemination of the password to inventory control personnel and those software specialists with a need to know.

After logging in, enter:

TAKE (CMD FILE NAME)   RETURN

The following MENU SCREEN will appear:

RIENUP-------------INVENTORY RECORDING ENTRY AND UPDATE--------------RIENUP

MENU SCREEN

SELECT ONE OF THE FOLLOWING:

(1) PART DESCRIPTION SCREEN

(2) PURCHASE ORDER SCREEN

(3) RECEIPT HISTORY SCREEN

(4) WITHDRAWAL HISTORY SCREEN

(5) INVENTORY USER SCREEN

(6) SPARES RETURNED SCREEN

(7) WITHDRAWAL ERROR CORRECTION SCREEN

SELECTION:

ENTER:

(Desired selection number 1 - 7)   RETURN

The selected screen will appear with appropriate operator prompting. Samples of each screen follow in Figures 19-5 through 19-11. Table 19-1 lists operator information and error messages.

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```
RIENUP-----------INVENTORY RECORDING ENTRY AND UPDATE------------------------RIENUP

                      PART DESCRIPTION SCREEN


   PART NUMBER          $MILL02
```

Figure 19-5. Part Description Screen Prompt

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```
RIENUP-----------INVENTORY RECORDING ENTRY AND UPDATE--------------------RIENUP

                         PART DESCRIPTION SCREEN

   PART NUMBER       :BILL02             DRAWING NUMBER:        02-BILL____
   PART REVISION/ALTERATION NUMBER: 12   CONSUMABLE SPARE CODE:   AA
   ITEM NAME: REDS DWARFS___________     ITEM TYPE:               BR
   SAFETY QTY:00050        MAX QTY: 00300        REORDER LEVEL: 00100
   GEOGRAPHIC LOCATION: G                BUILDING LOCATION:       B-23
   ROOM LOCATION:        R-222           RACK-ROW-BIN:            123456
   SUGGESTED ORDER QUANTITY: 00000       QUANTITY ON HAND       : 00210
   NUMBER OF ORDERS WITH STOCK: 00002    QUANTITY ON ORDER       :00100 ?
INFORMATION: PART NUMBER EXISTS, ASSUMING MODIFICATION
```

Figure 19-5A. Part Description Screen

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```
RIEHUP-----------INVENTORY RECORDING ENTRY AND UPDATE----------------------RIEHUP

 PURCHASE ORDER ID.    : C11111        PURCHASE ORDER LINE ITEM: 11
```

Figure 19-6. Purchase Order Screen Prompt

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```
RIENUP----------INVENTORY RECORDING ENTRY AND UPDATE--------------------RIENUP

PURCHASE ORDER ID.      : C11111        PURCHASE ORDER LINE ITEM: 11

  PART NUMBER           :BILL02           DRAWING NUMBER:        02-BILL_____
PART REVISION/ALTERATION NUMBER:    12 VENDOR CODE              : 8881_
MANUF PART NUMBER: 111111________       UNIT OF MEASURE          : 111
QUANTITY ON ORDER: 00001                UNIT PRICE(DOLLARS)      : 0000012
FEDERAL STOCK NUMBER:  11111________    SQUAK NUMBER             : 00000
INSPECTION DATE         : ______        DISPOSITION CODE         : ______
PROMISE DATE            : 11AUG81       OVERRIDE REPLACEMENT COST: _

INFORMATION:PURCHASE ORDER EXISTS, ASSUMING MODIFICATION.
```

Figure 19-6a, Purchase Order Screen

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```
RIENUP------------INVENTORY RECORDING ENTRY AND UPDATE--------------------RIENUP

                      RECEIPT HISTORY SCREEN

 PURCHASE ORDER ID.    : C11111        PURCHASE ORDER LINE ITEM: 11

 RECEIPT DATE: 17-AUG-81           QUANTITY RECEIVED: 00010
```

Figure 19-7. Receipt History Screen

```
SIGNUP----------INVENTORY RECORDING ENTRY AND UPDATE-----------------------SIGNUP

                    WITHDRAWAL HISTORY SCREEN

  PART NUMBER         [illegible]

WITHDRAWAL DATE      : [illegible]-AUG-81
QUANTITY WITHDRAWN   : 00001
USER ID.             : [illegible]
```

Figure 19-8. Withdrawal History Screen

C-10

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```
RICHUP------------INVENTORY RECORDING ENTRY AND UPDATE------------------------RICHUP

                        INVENTORY USER SCREEN


              USER ID : WHAT?

              ENTER ONE OF THE FOLLOWING:

                 (1) ADD

                 (2) DELETE

                              OPTION: 1
```

Figure 19-9. Inventory User Screen

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```
RIEMUP------------INVENTORY RECORDING ENTRY AND UPDATE----------------------RIEMUP

                         SPARES RETURNED SCREEN

   SERIAL NUMBER                              : XX-XX-XX__
   TRANSACTION DATE                           : 15-AUG-81
   SERVICE FLAG                               : S
    (IN=I,OUT=O,SCRAPS=S,REPAIR=R)

   USER ID.                                   : BRAY2

   PART NUMBER                                : 01LL02

 GEOGRAPHIC LOCATION: G                        BUILDING LOCATION:      B-28

 ROOM LOCATION:        R-222                   RACK-ROW-BIN:           123456

                                                                          ?
```

Figure 19-10. Spares Returned Screen

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WITHDRAWAL ERROR

CORRECTION SCREEN

TBP

Figure 19-11. Withdrawal Error Correction Screen

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Table 19-1. Operator Messages

RIENUP OPERATOR INTERFACE FORMATS

```
*******************************************************************************
*
*     INFORMATION MESSAGES   NO OPERATOR RESPONSE REQUIRED
*
*******************************************************************************
```

RIENUP-END OF PROCESSING

PART NUMBER EXISTS, ASSUMING MODIFICATION

PART NUMBER NOT IN DATA BASE, ASSUMING NEW ENTRY,

STORE/MODIFY SUCCESSFULLY COMPLETED,

PURCHASE ORDER EXISTS, ASSUMING MODIFICATION,

PURCHASE ORDER NOT IN DATA BASE, ASSUMING NEW ENTRY,

NO CHANGE ENTERED,

NO PURCHASE ORDER FOUND, ASSUMING NEW ENTRY,

NO PURCHASE ORDER FOUND, ENTRY CAN NOT BE PROCESSED,

RECEIVE HISTORY FOUND, ASSUMING MODIFICATION,

NO RECEIVE HISTORY FOUND, ASSUMING NEW ENTRY,

USER ID SUCCESSFULLY DELETE,

SERIAL NUMBER NOT FOUND, ASSUMING NEW ENTRY,

SERIAL NUMBER SUCCESSFULLY STORED,

NOT IN DATABASE ASSUMING NEW ENTRY,

WITHDRAWAL HISTORY SUCCESSFULLY STORED IN DATABASE,

WITHDRAWAL SUCCESSFULLY MODIFIED IN DATABASE,

NO PART NUMBER IN DATABASE,

ISP SERIAL NUMBER CORRECTLY STORED,

ISP SERIAL NUMBER CORRECTLY MODIFIED,

Table 19-1. Operator Messages (cont'd)

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ERROR MESSAGES	RESPONSE
PURCHASE ORDER IN DATABASE, ONLY NEW ENTRIES ALLOWED.	CORRECT ENTRY
PART NUMBER IN DATABASE, ONLY NEW ENTRIES ALLOWED.	CORRECT ENTRY
PART NUMBER EXISTS ALREADY, NEW ENTRIES NOT ALLOWED.	CORRECT ENTRY
RECEIPT HISTORY EXISTS, MODS NOT ALLLOWED.	CORRECT OR REMOVE
RECEIPT HISTORY EXISTS, MODS NOT ALLOWED.	CORRECT OR REMOVE
WITHDRAW HISTORY EXIST, MODS NOT ALLOWED.	CORRECT OR REMOVE
WITHDRAWAL HISTORY FOUND, MODS ARE NOT ALLOWED.	CORRECT OR REMOVE
SPARES HISTORY IN DATABASE, MODS ARE NOT ALLOWED.	CORRECT OR REMOVE
QUANTITY CANNOT BE ZERO.	CORRECT VALUE
USER ID NOT IN DATA BASE.	CORRECT ENTRY
NO CHANGES MADE, ENTER VALUES OR EXIT.	OBEY MESSAGE
SERVICE FLAG IS NOT I,O,S,R.	CORRECT ENTRY
USER ID NOT IN DATABASE TO DELETE.	CORRECT OR SKIP
USER ID ALREADY EXISTS CANNOT BE ADDED.	CORRECT OR SKIP
USER-ID NOT FOUND IN DATABASE.	CORRECT OR SKIP
PART DESCRIPTION NOT IN DATABASE.	CORRECT OR SKIP

19.4.1.1 Error Handling Options

All entries/changes appear on the CRT as they are made; however, they are not entered into the data base until all fields have been cycled through, at which point a final "carriage return" will enter the information in the data base.

Prior to the final "carriage return", any field may be revisited and corrected. After the final "carriage return", if an erroneous entry has been made, the screen may be recalled and the error overwritten with the correct data, except in the case of EXCESS withdrawal history screen error. To correct an EXCESS withdrawal history error after it has entered the data base, MENU 7, the withdrawal error corrections screen, must be selected and the correct information entered in accordance with the operator prompts.

19.4.2 INVENTORY REPORTS PROGRAM

The inventory reports program provides nine printouts used to maintain management control of the inventory. These reports retrieve data from the inventory area and create output files containing the abstracted information. The data flow is shown in Figure 19-12. The nine reports can be run independently or they can be submitted as a unit via a batch command file. The following reports are available:

a. RIDLOR - DELINQUENT ORDER REPORT

b. RISPAR - SPARE PARTS LIST

c. RILOUR - LOCATION USAGE REPORT

d. RIOTOR - ONE TIME ORDERS

e. RIINIR - INACTIVE ITEMS REPORT

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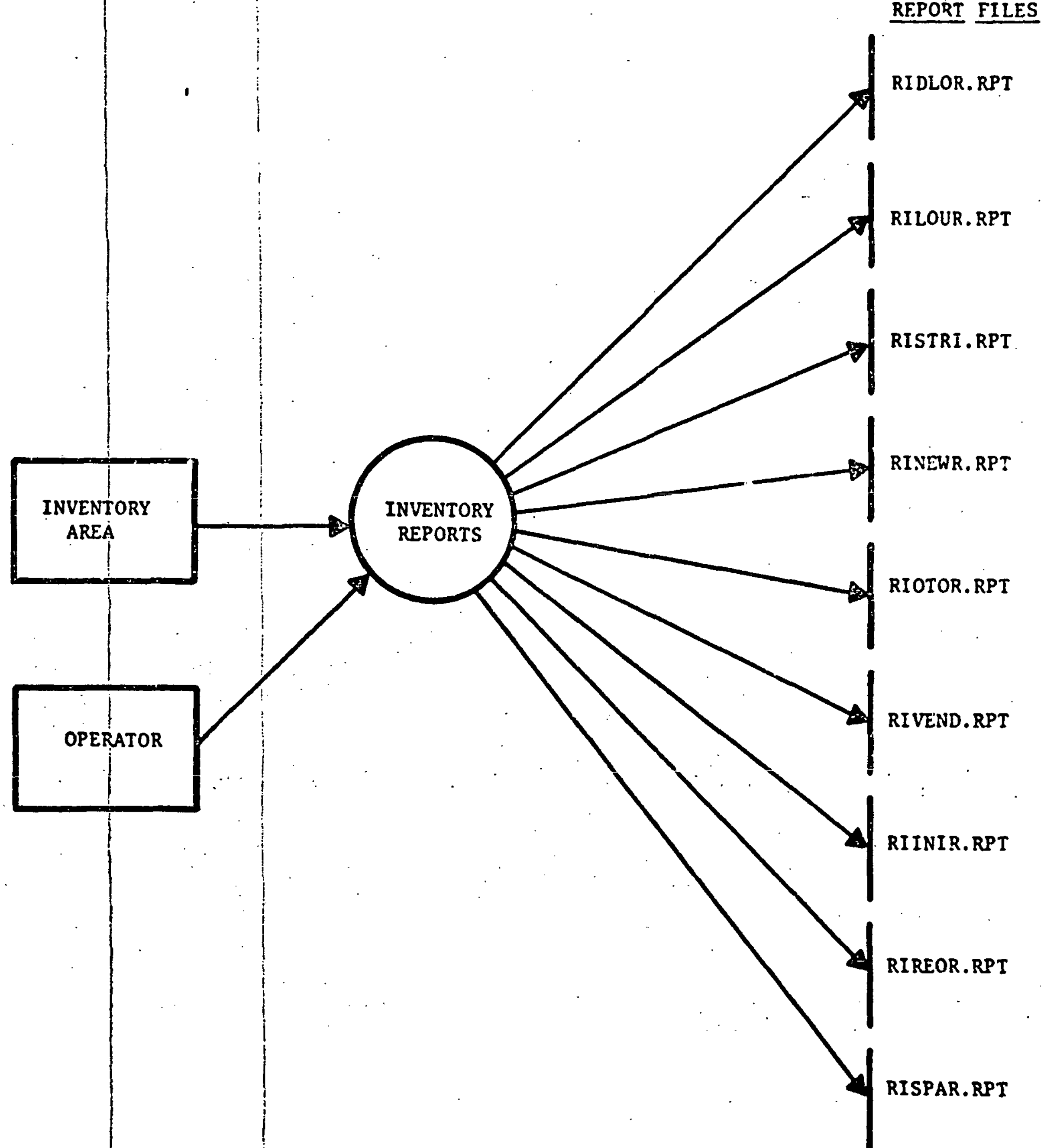

Figure 19-12. Data Flow Diagram (Inventory Reports)

f. RINEWR - NEW PURCHASE ORDER

g. RIREOR - RECOMMENDED REORDER REPORT

h. RISTIR - MASTER STOCK LIST

i. RIVEND - VENDOR CODE MASTER LIST

19.4.2.1 RIDLOR-DELINQUENT ORDER REPORT

This report selects items ordered but not received by the promised date and lists them in overdue groups: 0-29 days, 30-59 days, 60-89 days, and greater than 89 days overdue. Examples of RIDLOR printout are shown in Figures 19-13 and 19-13a.. The RIDLOR printout is normally extracted once a month. RIDLOR is used to identify lead time problems in parts acquisition. It may trigger a change in the reorder level/suggested order quantity/max. quantity allowed on hand to prevent lead time problems from impacting Ground Segment Operations. Estimated run time - five minutes.

19.4.2.2 RISPAR - SPARE PARTS LIST

This report lists all spare parts (not office supplies or consumables) in the inventory area. The report is sorted by part number and by serial number. Examples of RISPAR printout are shown in Figures 19-14 and 19-14a. RISPAR extracts information from the spares returned record. It provides the means of tracking service life of individual spares. RISPAR is extracted monthly or as required. Estimated run time - 20 minutes.

19.4.2.3 RILOUR - LOCATION USAGE REPORT

This report lists all withdrawals in a period selected by the operator. The

REPORT : RI1460
SUBSYSTEM : R39

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 22-SEP-81
TIME : 14:17

DELINQUENT ORDERS REPORT(60 TO 89 DAYS OVERDUE)

DAYS OVERDUE	VENDOR CODE	ITEM NAME	PART NUMBER	QUANTITY ORDERED	UNIT OF MEASURE	PROMISE DATE	ORDER DATE	MANUF-PART NUMBER	ORDER ID
0065	ZZZZZ	BLUE STARS ARE BRIGHTER	BILL01	100	NIL	19-JUL-81	10-APR-81	LONG-MANUF-1234	E1111111

SUBTOTAL
ITEMS

1

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Figure 19-13. Delinquent Orders Report

REPORT : RT1460 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PAGE : 2
SUBSYSTEM : MMS GODDARD SPACE FLIGHT CENTER DATE : 22-SEP-81
LANDSAT MISSION MANAGEMENT FACILITY TIME : 14:17

DELINQUENT ORDERS REPORT(90 OR MORE DAYS OVERDUE)

DAYS OVERDUE	VENDOR CODE	ITEM NAME	PART NUMBER	QUANTITY ORDERED	UNIT OF MEASURE	PROMISE DATE	ORDER DATE	MANUF-PART NUMBER	ORDER ID
0095	11111	BLUE STARS ARE BRIGHTER	BILL01	122	111	19-JUN-81	19-JUN-81	111111111111111	F1111111
0115	11111	RED GIANTS ARE A BLIGHT	BILL03	10000	CUP	30-MAY-81	28-FEB-81	333333333333333	G1111111
0125	QQ	RED DWARF CAN BE USEFUL	BILL02	100	IN	20-MAY-81	10-APR-81	OOURRR	D1111111
0125	SIFAL	GREEN CRAYONS ARE SWELL	BILL06	10	QT	20-MAY-81	30-APR-81	XXXXX	D1111112
0135	QQ	RED DWARF CAN BE USEFUL	BILL02	100	PT	10-MAY-81	20-APR-81	OOOOOO	C1111111
0145	00000	RED DWARF CAN BE USEFUL	BILL02	10	BTL	30-APR-81	10-APR-81	OOOOOO	H1111111
0145	SIFAL	GREEN CRAYONS ARE SWELL	BILL06	1	FT	30-APR-81	10-APR-81	SSSSSS	B1111113

SUBTOTAL
ITEMS

7

-- 4

GRAND
TOTAL

TOTAL ORDERS OVERDUE = 8

Figure 19-13a. Delinquent Orders Report

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REPORT : PI1530
SUBSYSTEM : MSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 22-SEP-81
TIME : 14:54

SPARES REPORT SORTED BY PART NUMBER

PART NUM	ITEM NAME	DAYS IN SERVICE	INTO SERVICE	OUT OF SERVICE	SERVICE FLAG	SERIAL NUMBER	USER ID
BILL01	BLUE STARS ARE BRIGHTER	0149	30-APR-81	09-JUN-81	I	12-BILL01	BRAY1
	BLUE STARS ARE BRIGHTER	0268	01-JAN-81	19-FEB-81	I	11-BILL01	BRAY2
BILL02	RED DWARF CAN BE USEFUL	0000	10-APR-81	19-JUL-81	S	XX-XX-XX	BRAY3
	RED DWARF CAN BE USEFUL	0263	02-JAN-81	04-JAN-81	I	11-BILL02	BRAY3
	RED DWARF CAN BE USEFUL	0000	10-APR-81	19-JUL-81	S	VVVV-VVV	BRAY3
	RED DWARF CAN BE USEFUL	0010	10-APR-81	19-JUL-81	O	12-BILL02	BRAY4
BILL03	RED GIANTS ARE A BLIGHT	0006	30-APR-81	29-JUN-81	O	12-BILL03	BRAY1
	RED GIANTS ARE A BLIGHT	0166	10-APR-81	20-APR-81	I	11-BILL03	BRAY4
BILL04	BLACK HOLES ARE HUNGRY	0005	10-APR-81	30-MAY-81	Z	12-BILL04	BRAY1
	BLACK HOLES ARE HUNGRY	0269	05-JAN-81	10-APR-81	I	13-BILL04	BRAY2
	BLACK HOLES ARE HUNGRY	0036	01-JAN-80	01-JAN-81	O	14-BILL04	BRAY3

TOTAL NUMBER OF SPARE PARTS = 11

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Figure 19-14. Spares Sorted By Part Number

REPORT : RI1530
SUBSYSTEM : RS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
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TIME : 14:54

SPARES REPORT SORTED BY SERIAL NUMBER

SERIAL NUMBER	DAYS IN SERVICE	INTO SERVICE	OUT OF SERVICE	SERVICE FLAG	USER ID	PART NUMBER	ITEM NAME
11-BILL01	0268	01-JAN-81	19-FEB-81	I	BRAY2	BILL01	BLUE STARS ARE BRIGHTER
11-BILL02	0263	02-JAN-81	04-JAN-81	I	BRAY3	BILL02	RED DWARF CAN BE USEFUL
11-BILL03	0166	10-APR-81	20-APR-81	I	BRAY4	BILL03	RED GIANTS ARE A BLIGHT
12-BILL01	0149	30-APR-81	09-JUN-81	I	BRAY1	BILL01	BLUE STARS ARE BRIGHTER
12-BILL02	0010	10-APR-81	19-JUL-81	O	BRAY4	BILL02	RED DWARF CAN BE USEFUL
12-BILL03	0006	30-APR-81	22-JUN-81	C	BRAY1	BILL03	RED GIANTS ARE A BLIGHT
12-BILL04	0005	10-APR-81	30-MAY-81	[illegible]	BRAY1	BILL04	BLACK HOLES ARE HUNGRY
13-BILL04	0269	05-JAN-81	10-APR-81	I	BRAY2	BILL04	BLACK HOLES ARE HUNGRY
14-BILL04	0036	01-JAN-80	01-JAN-81	O	BRAY3	BILL04	BLACK HOLES ARE HUNGRY
YYYY-YYY	0000	10-APR-81	19-JUL-81	S	BRAY3	BILL02	RED DWARF CAN BE USEFUL
XX-XX-XX	0000	10-APR-81	19-JUL-81	S	BRAY2	BILL02	RED DWARF CAN BE USEFUL

TOTAL NUMBER OF SPARE PARTS = 11

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Figure 19-14a. Spares Sorted By Serial Number

report is sorted by user and by part number. Figures 19-15 and 19-15a show examples of RILOUR printouts. RILOUR allows extraction of parts usage information by individual part number or by individual user. It is used primarily by maintenance personnel to verify reliability data. RILOUR is extracted on an as required basis. Estimated run time is five minutes.

19.4.2.4 RIOTOR - One Time Orders

This report lists all orders in a date range selected by the operator for which there is no plan to reorder the item. These items are identified by the fact that the reorder level in the part description screen is zero. Figure 19-16 shows an example of a ONE TIME ORDER PRINTOUT. RIOTOR provides budgetary information on special orders. It is run on an as required basis. Estimated run time is two minutes.

19.4.2.5 RIINIR - Inactive Items Report

This report lists all items for which there has been no activity prior to a specified date. The operator enters a date and the report selects those items which have been unchanged prior to the date the operator entered. Figure 19-17 shows an example of RIINIR printout. RIINIR provides baseline usage data for Engineering Support and allows Logistics personnel to monitor shelf life. It is extracted as required by Engineering Support, and at six month intervals for shelf life monitoring. Estimated run time is five minutes.

19.4.2.6 RINEWR - New Purchase Order

This report lists all purchase orders placed during a date range selected by the

REPORT : RI1490
SUBSYSTEM : MRS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE :
DATE : 29-SEP-
TIME : 10:

WITHDRAWAL HISTORY FOR ITEM 16

DURING PERIOD 01-JAN-81 THRU 29-SEP-81

PART NUMBER	ITEM NAME	MANUF PART NUMBER	UNIT OF MEASURE	QUANTITY WITHDRAWN	UNIT COST	COST TO REPLACE
BILL01	PURPLE	EEEEEE	02	10	$1.10	$111.00

TOTAL WITHDRAWALS 1 REPLACEMENT COST = $111.00

Figure 19-15. Withdrawal History By Item Number

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REPORT : R11490 | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION | PAGE : 1
SUBSYSTEM : RSS | GODDARD SPACE FLIGHT CENTER | DATE : 29-SEP-81
LANDSAT MISSION MANAGEMENT FACILITY | TIME : 10:52

WITHDRAWAL HISTORY FOR USER BRAY1,

DURING PERIOD 01-JAN-81 THRU 29-SEP-81

PART NUMBER	ITEM TYPE	ITEM NAME	MANUF PART NUMBER	QUANTITY WITHDRAWN	UNIT COST	COST TO REPLACE
BILL01	14	BLUE	AAAA	3	12300.00	$36,900.00
BILL01	15	YELLOW	AAAAA	10	123.00	$1,230.00
BILL01	16	PURPLE	EEEEEE	10	11.10	$111.00
BILL02	20	RUST	IRON OXIDE	10	100.00	$1,000.00
BILL02	21	COPPER	FFFFFF	10	111.00	$1,110.00
BILL03	17	ORANGE	SSSSSS	10	11.00	$110.00
BILL03	18	VIOLET	QQQQQQ	10	11111.00	$111,110.00
BILL03	19	WWWWWW	WWWWWW	10	11.10	$111.00

TOTAL WITHDRAWALS 8 REPLACEMENT COST = $151,682.00

Figure 19-15a. Withdrawal History By User

REPORT : MI1510 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PAGE : 1
SUBSYSTEM : RSS GODDARD SPACE FLIGHT CENTER DATE : 22-SEP-81
LANDSAT MISSION MANAGEMENT FACILITY TIME : 14159

ONE TIME ORDERS

FROM 01-JAN-81 THRU 22-SEP-81

PART NUMBER	VENDOR CODE	PART NUM	ITEM NAME	ON HAND	UNIT PRICE	QUANTITY RECEIVED	RECEIVED COST
BTLL01	22222	LONG-MANUF-1234	BLUE STARS ARE BRIGHTER	10	12222.22	5	$61,111.10
BTLL01	11111	111111111111111	BLUE STARS ARE BRIGHTER	10	11111.11	3	$33,333.33
					TOTAL COST	=	$94,444.43

Figure 19-16. One Time Orders

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REPORT : RI1470
SUBSYSTEM : MRS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 22-SEP-81
TIME : 14122

INACTIVE ITEMS PRIOR TO. 01-MAR-81

PART NUMBER	ITEM NAME	REORDER LEVEL	VENDOR CODE	MANUF PART NUMBER	UNIT PRICE	ON HAND	ITEM COST	LAST ACTIVITY
B11101	BLUE STARS ARE BRIGHTER	100	11111	111111111111111	11111.11	10	$111,111.10	19-FEB-81
	BLUE STARS ARE BRIGHTER	100	ZZZZZ	LONG-MANUF-1234	12222.22	10	$122,222.20	19-FEB-81
B11106	GREEN CRAYONS ARE SMELL	30	STEAL	SSSSSS	12.34	10	$123.40	01-MAR-81
	GREEN CRAYONS ARE SMELL	30	STEAL	XXXXX	100.00	200	$20,000.00	01-MAR-81

TOTAL COST ALL INACTIVE ITEMS = $253,456.70

Figure 19-17, Inactive Items

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operator. Purchase orders are listed by part number. Figure 19-18 shows an example of a RINEWR printout. RINEWR provides cost information and parts ordered/received in a given period. It is used by the Administrative Assistant for budget management. RINEWR is extracted as required. Estimated run time is five minutes.

19.4.2.7 RIREOR - Recommended Reorder Report

This report lists all items at or below reorder level. It determines the amount to be reordered by subtracting the quantities on order but not received, and the quantity on hand, from the maximum stock level. If the amount to be ordered is negative the listing has a remark suggesting a change in the reorder level. Figure 19-19 shows an example of RIREOR printout. RIREOR triggers the writing of purchase orders, or a change in the reorder level or suggested order quantity on the part description screen of the inventory control entry and update program (RIENUP). RIREOR is extracted weekly by Logistics personnel. Estimated run time is five minutes.

19.4.2.8 RISTIR - Master Stock List

This report lists the entire inventory sorted by part number, physical location and item name. At the end of the part number, and item name listings, various inventory totals are printed. Figures 19-20 through 19-20d show examples of each RISTIR printout. RISTIR is used as an aid when taking a physical inventory. It is run annually. Estimated run time is 1.5 hours.

```
REPORT    : R11500            NATIONAL AERONAUTICS AND SPACE ADMINISTRATION             PAGE :          1
SUBSYSTEM :    RSS                   GODDARD SPACE FLIGHT CENTER                         DATE : 29-SEP-81
                                  LANDSAT MISSION MANAGEMENT FACILITY                    TIME :     10:56

                              PURCHASE ORDERS FROM  01-JAN-81  TO  01-SEP-81
```

PART NUMBER	VENDOR CODE	MANUF PART NUMBER	ORDER ID	ITEM NAME	ON ORDER	QUANTITY RECEIVED	UNIT PRICE	RECEIVED ITEM COST
BILL01	11111	111111111111111	F1111111	BLUE STARS ARE BRIGHTER	122	3	11111.11	$33,333.33
	22222	LONG-MANUF-1234	E1111111	BLUE STARS ARE BRIGHTER	100	5	12222.22	$61,111.10
BILL02	00	000RRR	D1111111	RED DWARF CAN BE USEFUL	100	10	34567.89	$345,678.90
	00	000000	C1111111	RED DWARF CAN BE USEFUL	100	30	23456.78	$703,703.40
	00000	000000	H1111111	RED DWARF CAN BE USEFUL	10	200	10.00	$2,000.00
BILL03	11111	333333333333333	G1111111	RED GIANTS ARE A BLIGHT	10000	912	22222.22	$20,266,664.64
BILL06	STEAL	SSSSSS	B1111113	GREEN CRAYONS ARE SWELL	1	10	12.34	$123.40
	STEAL	XXXXX	D1111112	GREEN CRAYONS ARE SWELL	10	200	100.00	$20,000.00

TOTAL RECEIVED COST $21,432,614.77

Figure 19-18. New Purchase Orders List

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REPORT : AI1520
SUBSYSTEM : RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

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DATE : 29-SEP-81
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RECOMMENDED STOCK ORDERS

PART NUMBER	ITEM NAME	VENDOR CODE	MANUF PART NUMBER	MAX QTY	ON HAND	ON ORDER	RECMD ORDER	UNIT COST	REORDER ITEM COST	STOCK NUM
BILL01	BLUE STARS ARE BRIGHTER	ZZZZZ	LONG-MANUF-1234	300	98	100	102	$12,345.67	$1,259,258.34	0000012345123
BILL02	RED DWARF CAN BE USEFUL	00000	000000	300	220	100	-20	$12,345.67	$.00	0123123456789
BILL03	RED GIANTS ARE A BLIGHT	11111	333333333333333	300	12	100	188	$12,345.67	$2,320,985.96	1234567890123
BILL06	GREEN CRAYONS ARE SWELL	STEAL	XXXXX	200	20	10	170	$34,560.00	$5,875,200.00	1234567890123

TOTAL REORDER COST $9,455,444.30

NOTE: WHEN RECMD ORDER IS NEGATIVE, REORDER LEVEL MAY BE SET TOO HIGH ....

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Figure 19-19. Recommended Reorder Report

REPORT : RI1480
SUBSYSTEM : R88

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 22-SEP-81
TIME : 14:28

MASTER STOCK LIST BY PART NUMBER

PART NUMBER	VEND CODE	MANUFACTURE'S PART NUMBER	ITEM NAME	MAX QTY	ORDER LEVEL	ON HAND	ISSUE QTY	UNIT PRICE	TOTAL COST OF ITEM	FEDERAL STOCK NUMBER
RILL01	11111	111111111111111	BLUE STARS ARE BRIGHTER	100	300	10	111	11111.11	$111,111.10	0987654321123
--	22222	LONG-MANUF-1234	BLUE STARS ARE BRIGHTER	100	300	10	RIL	12222.22	$122,222.20	0000012345123
						20			$233,333.30	
RILL02	QQ	000000	RED DWARF CAN BE USEFUL	250	300	24	PT	23456.78	$562,962.72	1234567890123
	QQ	000RRR	RED DWARF CAN BE USEFUL	250	300	20	IN	34557.89	$691,357.80	1122334455667
						44			$1,254,320.52	
RILL02	00000	000000	RED DWARF CAN BE USEFUL	250	300	200	RIL	10.00	$2,000.00	0123123456789
						200			$2,000.00	
RILL03	11111	333333333333333	RED GIANTS ARE A BLIGHT	100	300	122	CUP	22222.22	$2,711,110.84	1234567890123
						122			$2,711,110.84	
RILL06	STEAL	SSSSSS	GREEN CRAYONS ARE SWELL	30	200	10	FT	12.34	$123.40	1223456789123
	STEAL	XXXXX	GREEN CRAYONS ARE SWELL	30	200	200	QT	100.00	$20,000.00	1234567890123
						210			$20,123.40	

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Figure 19-20. Master Stock List By Part Number

REPORT : [illegible]
SUBSYSTEM : MSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

MASTER STOCK LIST BY PART NUMBER

PAGE : 2
DATE : 22-SEP-81
TIME : 14:28

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**** SUMMARY PART NUMBER INVENTORY SORT ****

TOTAL ITEMS OVER MAXIMUM QUANTITY	0
TOTAL ITEMS AT OR BELOW REORDER LEVEL	8
TOTAL ITEMS ON ORDER	8
TOTAL BETWEEN MAXIMUM AND REORDER LEVEL	0
TOTAL ITEMS WITH ZERO QUANTITY ON HAND	0
TOTAL VALUE OF INVENTORY ON HAND	$4,220,888,06
TOTAL VALUE OF ITEMS ORDERED BUT NOT RECEIVED	$209,170,941.99

Figure 19-20a. Master Stock List By Part Number

REPORT : RT14NO
SUBSYSTEM : RS6

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 23-SEP-81
TIME : 14:20

MASTER STOCK LIST LOCATION

GEOG LOCA	BLDG NUMBER	ROOM NUMBER	LOCATION RACK-ROW-BIN	ON HAND	ITEM NAME	PART NUMBER	VEND CODE	MANUFACTURE'S PART NUMBER
G	B-23	R-222	12--34--56	220	RED DWARF CAN BE USEFUL	BILL02	QQ	QQQQQQ
G	B-23	R-222	12--34--56	220	RED DWARF CAN BE USEFUL	BILL02	QQ	QQQRRR
G	B-23	R-222	12--34--56	220	RED DWARF CAN BE USEFUL	BILL02	QQQQQ	QQQQQQ
G	B-28	R-222	12--34--56	98	BLUE STARS ARE BRIGHTER	BILL01	11111	111111111111111
G	B-28	R-222	12--34--56	98	BLUE STARS ARE BRIGHTER	BILL01	ZZZZZ	LONG-MANUF-1234
G	B-28	R-222	12--34--56	12	RED GIANTS ARE A BLIGHT	BILL03	11111	333333333333333
G	B-28	R-222	12--34--56	20	GREEN CRAYONS ARE SWELL	BILL06	STEAL	SSSSSS
G	B-28	R-222	12--34--56	20	GREEN CRAYONS ARE SWELL	BILL06	STEAL	XXXXX

Figure 19-20b. Master Stock List By Location

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REPORT : RI1480 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PAGE : 1
SUBSYSTEM : MRS GODDARD SPACE FLIGHT CENTER DATE : 22-SEP-81
LANDSAT MISSION MANAGEMENT FACILITY TIME : 1412

MASTER STOCK LIST BY ITEM NAME

ITEM NAME	PART NUMBER	VEND CODE	MANUFACTURER'S PART NUMBER	MAX QTY	ORDER LEVEL	ON HAND	ISSUE QTY	UNIT PRICE	TOTAL COST OF ITEM	FEDERAL STOCK NUMBER
BLUE STARS ARE BRIGHTER	RILL01	11111	111111111111111	300	100	10	111	11111.11	$111,111.10	0987654321123
	RILL01	ZZZZZ	LONG-MANUF-1234	300	100	10	RIL	12222.22	$122,222.20	0000012345123
						20			$233,333.30	
GREEN CRAYONS ARE SWELL	RILL06	STEAL	SSSSSS	200	30	10	FT	12.34	$123.40	1223456789123
	RILL06	STEAL	XXXXX	200	30	200	QT	100.00	$20,000.00	1234567890123
						210			$20,123.40	
RED DWARF CAN BE USEFUL	RILL02	00	000000	300	250	24	PT	23456.78	$562,962.72	1234567890123
	RILL02	00	000RRR	300	250	20	IN	34567.89	$691,357.80	1122334455667
						44			$1,254,320.52	
RED DWARF CAN BE USEFUL	RILL02	00000	000000	300	250	200	RIL	10.00	$2,000.00	0123123456789
						200			$2,000.00	
RED GIANTS ARE A BLIGHT	RILL03	11111	333333333333333	300	100	122	CUP	22222.22	$2,711,110.84	1234567890123
						122			$2,711,110.84	

Figure 19-20c. Master Stock List By Item Name

REPORT : R51480
SUBSYSTEM : RRS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

MASTER STOCK LIST BY ITEM NAME

PAGE : 2
DATE : 22-SEP-81
TIME : 14:26

**** SUMMARY PART NUMBER INVENTORY SORT ****

TOTAL ITEMS OVER MAXIMUM QUANTITY	0
TOTAL ITEMS AT OR BELOW REORDER LEVEL	8
TOTAL ITEMS ON ORDER	6
TOTAL BETWEEN MAXIMUM AND REORDER LEVEL	0
TOTAL ITEMS WITH ZERO QUANTITY ON HAND	0
TOTAL VALUE OF INVENTORY ON HAND	$4,220,888.06
TOTAL VALUE OF ITEMS ORDERED BUT NOT RECEIVED	$209,170,941.99

Figure 19-20d. Master Stock List By Item Name

19.4.2.9 RIVEND - Vendor Code Master List

This report lists the entire inventory sorted by vendor code and by manufacturer's part number. Figures 19-21 through 19-21b show examples of RIVEND products. The sort by manufacturer's part number includes the physical location of each part in the inventory and will be used by Logistics personnel to locate parts for issue. RIVEND is extracted weekly. Estimated run time is one hour.

19.4.2.10 Terminal Procedures

Standard terminal procedures are used to obtain inventory reports. After logging in:

ENTER: (TBS)

TAKE (CMD FILE FOR BATCH REPORTS) RETURN

OR

(REPORT NAME, RISTIR, ETC.)

Program will provide necessary operator prompting. When prerequisites are met the printout will be generated. Table 19-2 lists operator prompting.

19.4.2.11 Estimated Run Times

A 6000 line item inventory is assumed. 50 milliseconds per disk access with two accesses are required for an extraction. Estimated times for a 6000 line printout are itemized below:

DISK ACCESS	-	10 MIN	CPU TIME 2.5 MIN
SORT TIME	-	2 MIN	
PRINT QUEUE WAITING TIME	-	VARIES	

PRINT TIME	-	15 MIN
TOTAL		27 MIN PLUS PRINT QUEUE WAITING TIME

A "process complete" operator alert will appear on the CRT when disk access and sort are complete and the information is in the print queue. Reports process may be aborted by the operator at any time.

REPORT : RT1780
SUBSYSTEM : RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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PAGE : 1
DATE : 23-SEP-81
TIME : 18143

MASTER STOCK LIST BY VENDOR CODE

VEND CODE	PART NUMBER	MANUFACTURER'S PART NUMBER	ITEM NAME	MAX QTY	ORDER LEVEL	ON HAND	ISSUE QTY	UNIT PRICE	TOTAL COST OF ITEM	FEDERAL STOCK NUMBER
11111	BILL01	111111111111111	BLUE STARS ARE BRIGHTER	300	100	10	111	11111.11	$111,111.10	0987654321123
	BILL03	333333333333333	RED GIANTS ARE A BRIGHT	300	100	122	CUP	22222.22	$2,711,110.84	1234567890123
						132			$2,822,221.94	
GR	BILL02	000RAR	RED DWARF CAN BE USEFUL	300	250	20	IN	34567.89	$691,357.80	1122334455667
	BILL02	000000	RED DWARF CAN BE USEFUL	300	250	24	PT	23456.78	$562,962.72	1234567890123
						44			$1,254,320.52	
GGGGG	BILL02	000000	RED DWARF CAN BE USEFUL	300	250	200	RIL	10.00	$2,000.00	0123123456789
						200			$2,000.00	
STEAL	BILL06	555555	GREEN CHAIONS ARE SMELL	200	30	10	FT	12.34	$123.40	1223456789123
	BILL06	XXAXX	GREEN CHAIONS ARE SMELL	200	30	200	QT	100.00	$20,000.00	1234567890123
						210			$20,123.40	
ZZZZZ	BILL01	LONG-NAMUF-1234	BLUE STARS ARE BRIGHTER	300	100	10	RIL	12222.22	$122,222.20	0000012345123
						10			$122,222.20	

Figure 19-21. Master Stock List By Vendor Code

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REPORT : M11780 SUBSYSTEM : MSA	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GODDARD SPACE FLIGHT CENTER LANDSAT MISSION MANAGEMENT FACILITY	PAGE : 2 DATE : 23-SEP-81 TIME : 14:43

MASTER STOCK LIST BY VENDOR CODE

**** SUMMARY PART NUMBER INVENTORY SORT ****

TOTAL ITEMS OVER MAXIMUM QUANTITY	0
TOTAL ITEMS AT OR BELOW REORDER LEVEL	8
TOTAL ITEMS ON ORDER	8
TOTAL BETWEEN MAXIMUM AND REORDER LEVEL	0
TOTAL ITEMS WITH ZERO QUANTITY ON HAND	0
TOTAL VALUE OF INVENTORY ON HAND	$4,220,888.06
TOTAL VALUE OF ITEMS ORDERED BUT NOT RECEIVED	$209,170,941.99

Figure 19-21a. Master Stock List By Vendor Code

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REPORT : RII790
SUBSYSTEM : RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 05-NOV-81
TIME : 16:31

MASTER STOCK LIST BY MANUFACTURE'S PART NUMBER (RIVEND)

MANUFACTURE'S PART NUMBER	PART NUMBER	VEND CODE	ITEM NAME	MAX QTY	ORDER LEVEL	ON HAND	ISSUE QTY	UNIT PRICE	LOCATION OF ITEM	FEDERAL STOCK NUMBER
0010037027	223199	VC009	BELT PNEUMATIC	1	1	2	EA	98.60	CA--B4--	
0041274301	223195	VC009	JJ CARD	1	1	2	EA	513.10	CA--B4--	
0043024200	223197	VC009	EOT/BOT ASSY	1	1	2	EA	63.38	CA--B4--	
0043030500	2231[illegible]	VC009	R/W [illegible] ASSY	1	1	2	EA	1675.00	CA--B4--	
0043103202	223201	VC009	KC CARD	1	1	2	EA	469.35	CA--B4--	
0043105406	223215	VC009	JLCARD	1	1	2	EA	512.56	CA--B4--	
0043301201	223199	VC009	XA CARD	1	1	2	EA	599.65	CA--B4--	
0043302305	223200	VC009	KB CARD	1	1	2	EA	553.25	CA--B4--	
00443122306	223194	VC009	JV CARD	1	1	2	EA	594.85	CA--B4--	
0083165298	223216	VC009	JPCARD	1	1	2	EA	387.20	CA--B4--	
0100521306	223211	VC009	HQ CARD	1	1	2	EA	730.00	CA--B4--	
0401224201	223212	VC009	JF CARD	1	1	2	EA	348.00	CA--B4--	

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Figure 19-21b. Master Stock List By Manufacturer's Part Number

Table 19-2. Operator Interface Formats

MESSAGE	RESPONSE
ENTER LOW DATE (DD-MMM-YY)	ENTER START DATE
ENTER HIGH DATE (DD-MMM-YY)	ENTER END DATE
ERROR: DATE INVALID MUST BE DD-MMM-YY NOT XXX	ENTER A CORRECT DATE
ERROR: DATE RANGE IS WRONG - REPEAT WITH GOOD DATES	OBEY MESSAGE
*****NO RECORDS FOUND FOR PROCESSING	NONE
(END OF QUERY PHASE; PRINT IS FILE QL999E.LPT)	NONE

NOTE: 999 is a sequence # generated by the IQL

SECTION 20

PDR/ESR PROCESSING

20.1 ENVIRONMENT/RESOURCES

20.1.1 HARDWARE RESOURCES

The PDR/ESR processing requires the MMF-T system to operate.

20.1.2 SOFTWARE REQUIREMENTS

20.1.2.1 PDR

The PDR reports programs (RPDRAN, RPDRSR, RPDRST) of the Request Support System (RSS) generate reports per responsib'e area showing:

a. Total PDRs open for how many weeks since a certain date - RPDRAN

b. Summary of total PDRs open and closed during a certain period - RPDRSR

c. Total PDRs in each status - RPDRST.

The PDR report program RPOPCL generates sorted reports showing open and closed PDRs for a certain period for the selected responsible area(s).

Additionally, RPDRAN, RPDRSR and RPDRST use IQCALL - a system call facility to interface between IQL programs and COBOL utilities.

20.1.2.2 ESR

a. REMAIN - ESR maintenance software

b. RESRPT - ESR report software.

20.2 OVERVIEW/BACKGROUND

20.2.1 PDR

The Problem Defect Report (PDR) can be divided into three topics:

a. PDR generation and control scenario - PDR generation and control scenario is essentially a process flow of the PDR through various stages, from origination through problem analysis, fixing and closing.

b. PDR format - The PDR form is the physical paper used to note a defect or discrepancy as soon as it is discovered. The contents and format of this form are largely dictated by the generation and control scenario.

c. PDR reports - The PDR reports are designed to help management in tracking PDRs and in status accounting.

20.2.2 ESR

The ESR tracking process will provide the capability to maintain and report on requests for equipment maintenance and repair.

20.3 FUNCTIONAL DESCRIPTION

20.3.1 PDR FUNCTIONS

The PDR reports programs (Figure 20-1) together generate five reports. The PDR analysis report generator (RPDRAN) requires operator selection of a start date from which to tally PDRs for responsible areas according to how many weeks a PDR has been open since the date specified. The PDR summary report generator (RPDRSR) accepts start and stop dates from the operator. For each area, the PDRs opened and closed during that period are tallied. A net gain or loss is

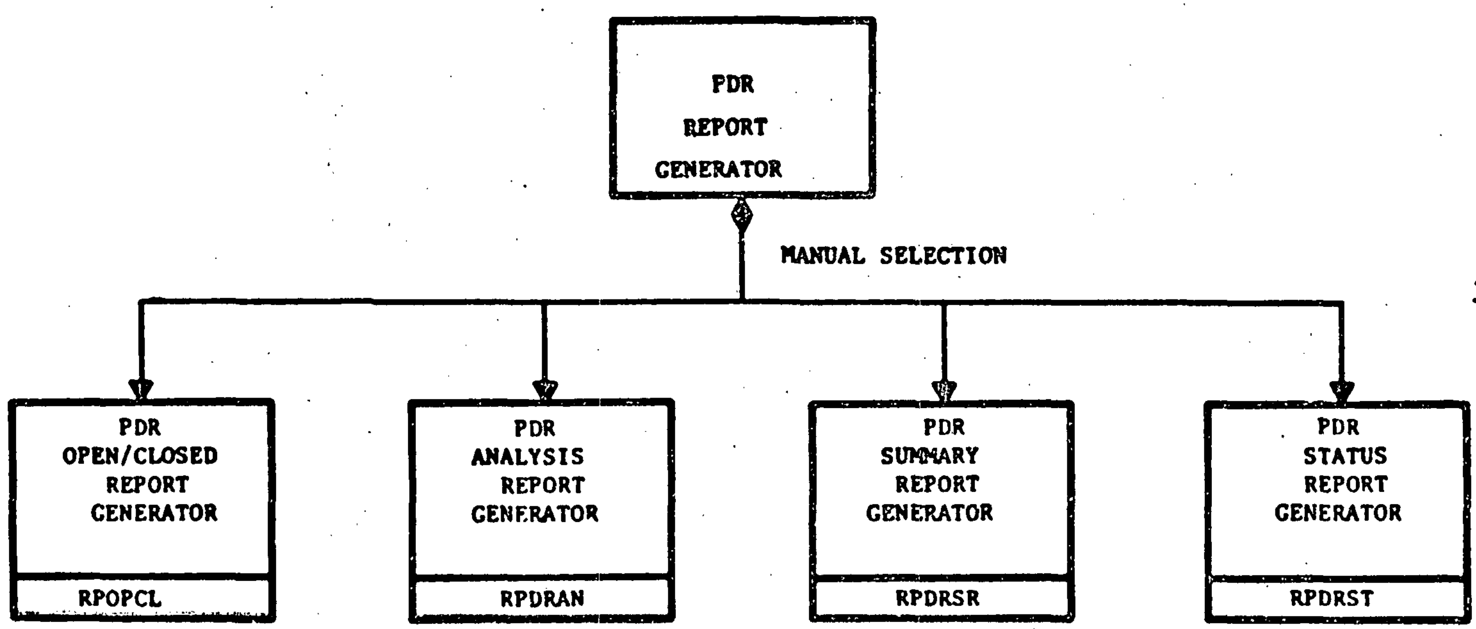

Figure 20-1. PDR Report Structure

then calculated. The PDR status report generator (RPDRST) tallies all PDRs according to specific status, according to open or closed status, as well as total PDRs. The PDR open/closed report generator (RPOPCL) uses a screen formatted to accept input from an operator. It accepts start and stop dates to determine the desired period; it accepts the responsible area(s) desired for the report; it accepts the selection for sort-key; it accepts the choice of report(s) desired: closed PDR report, open PDR report, or both. Based on the inputs received, open or closed or both reports are generated for the given search criteria. Figure 20-2 depicts the data flow of the above programs.

20.3.2 ESR FUNCTIONS

The ESR reports program generates two reports: the equipment configuration report, and the equipment service report (Figure 20-3).

20.4 PROCESS OPERATIONS

20.4.1 PDR GENERATION AND CONTROL SCENARIO

From the origination of a PDR to its closure, the PDR passes through various stages. Figures 20-4 and 20-5 depict the process flow. In describing the process flow, any reference to the designations, titles or hierarchy is avoided to make the flow more function-oriented.

a. When a problem is detected, the observer will initiate a PDR by filling out the required portions of the form and signing it. The PDR form is a three-part form with white, green and pink copies.

b. The form then goes for management concurrence. The concurree ensures

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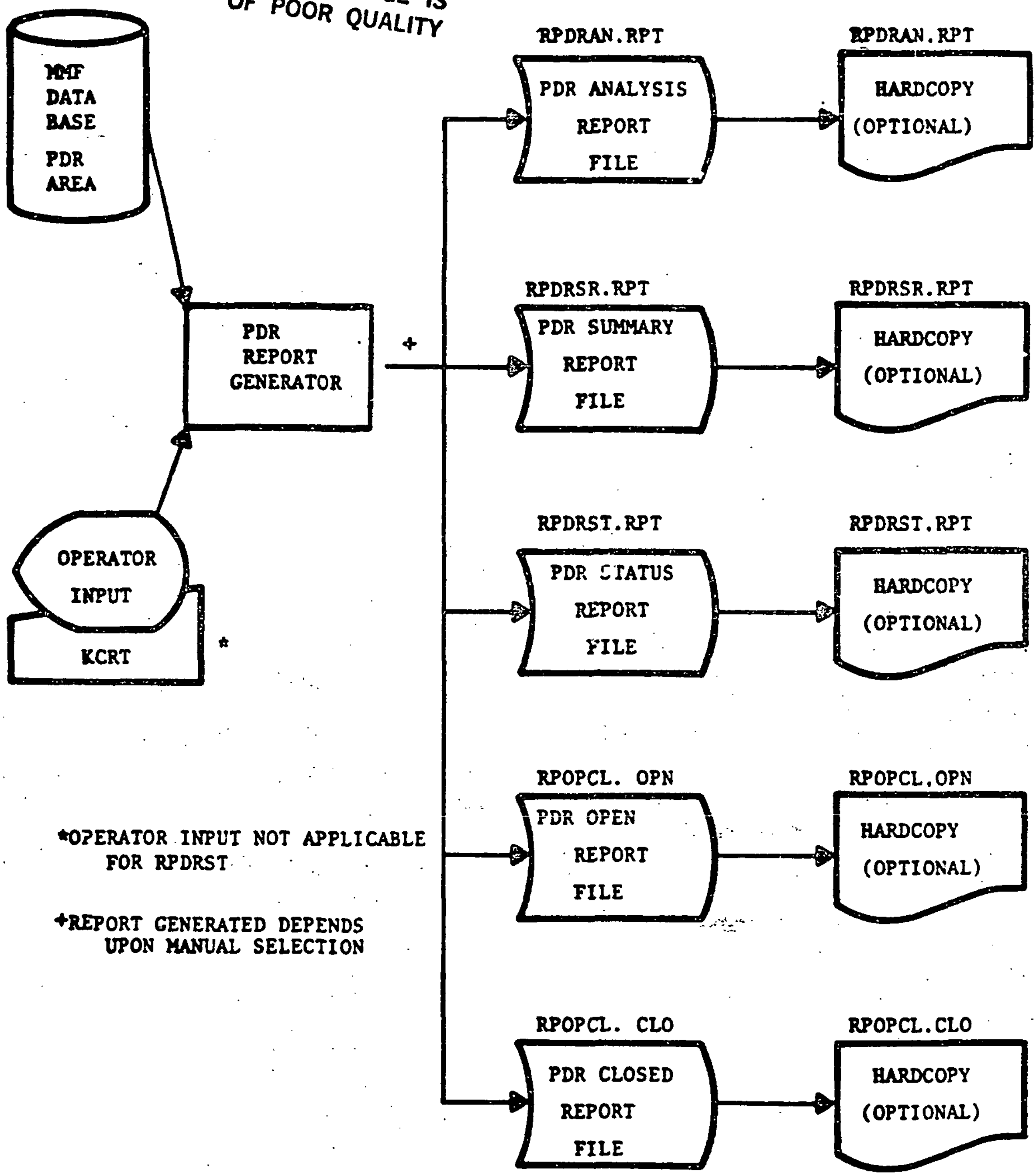

Figure 20-2. Data Flow Diagram

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Figure 20-3. ESR Process Flow

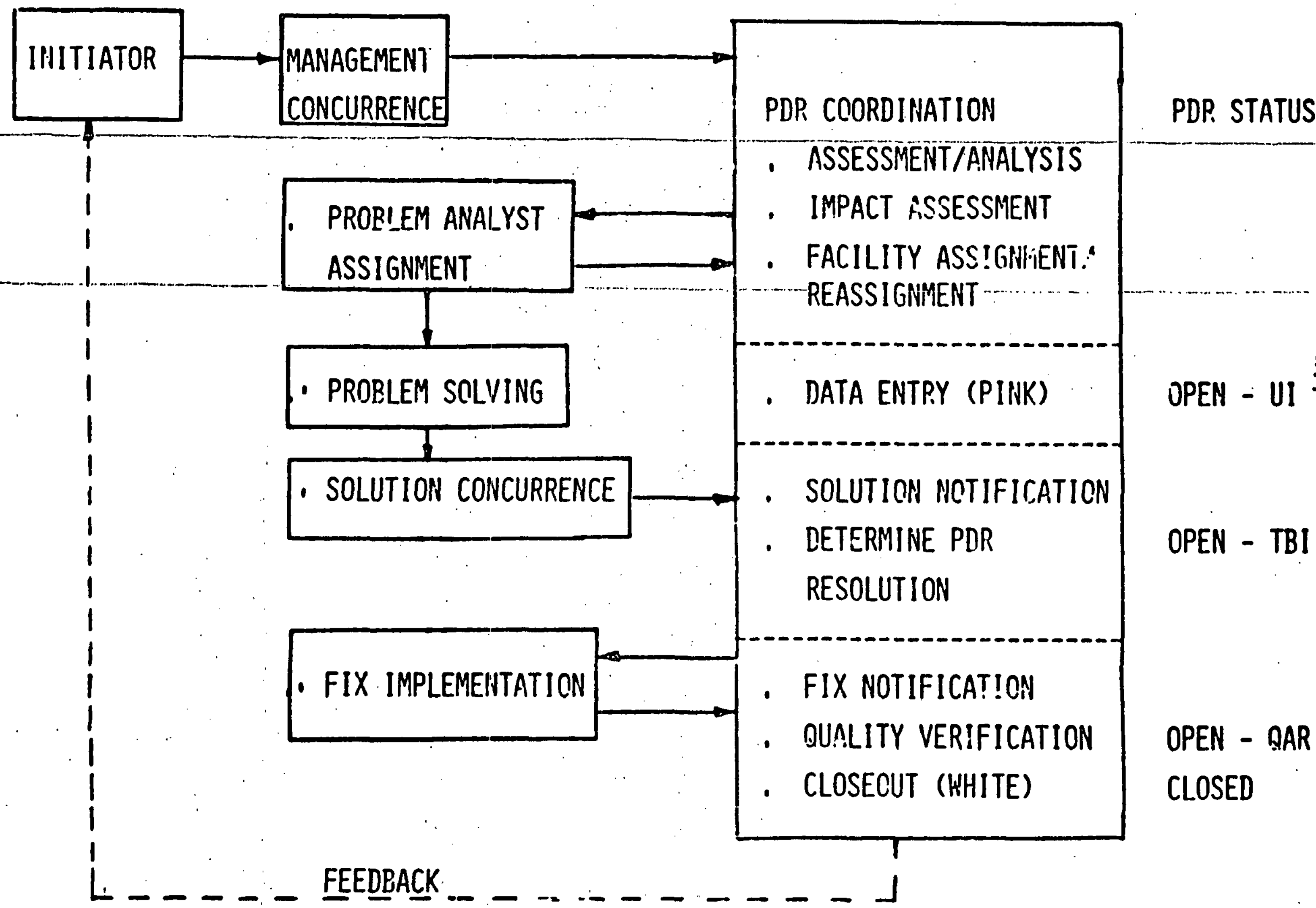

Figure 20-4. PDR Process Flow

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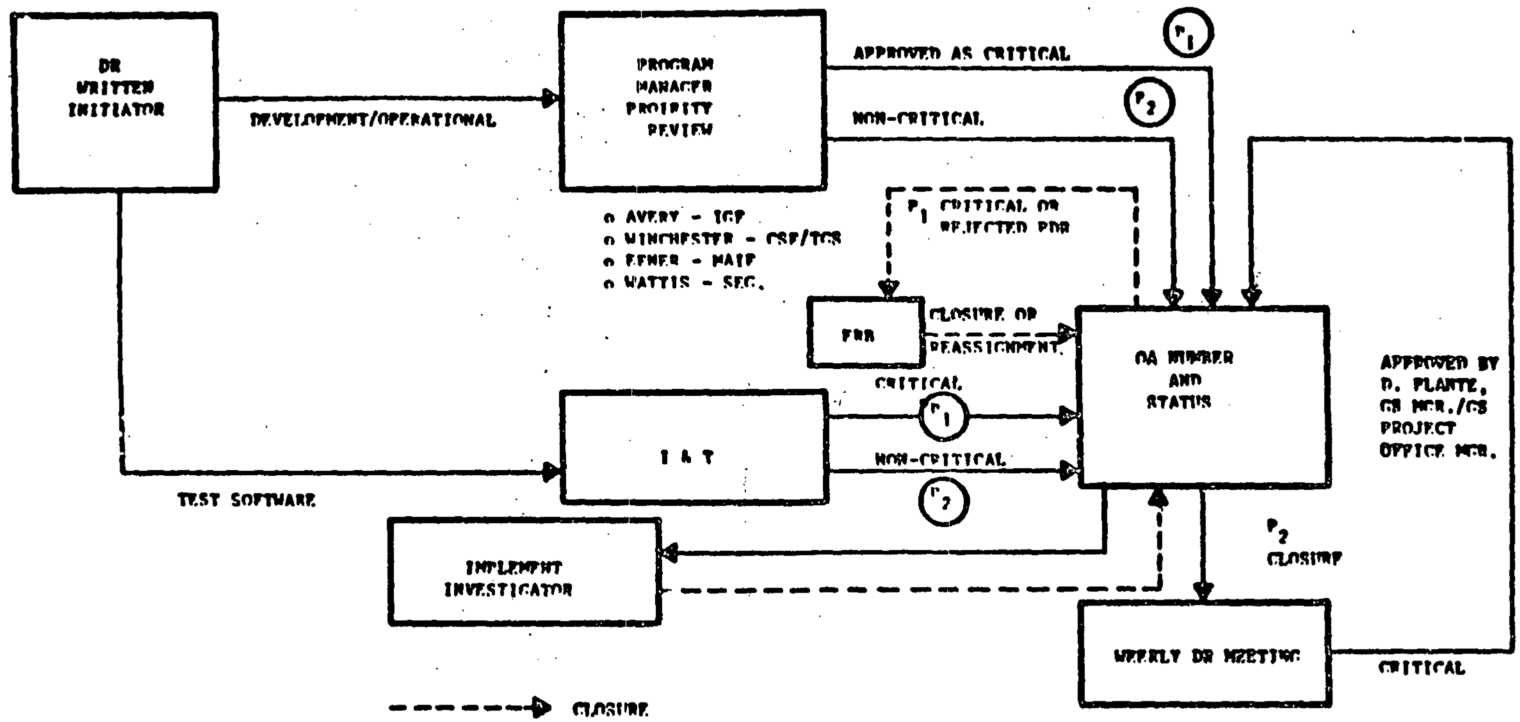

Figure 20-5, Problem Defect Report Flow Diagram

that all the basic information for resolving the PDR is made available on the form or is attached to the form.

c. Then the organization responsible for PDR coordination receives the PDR and assesses its impact. Assessment of the impact implies the designation of a priority for the PDR. In arriving at this priority code, there may be a need for coordination with the originating facility and the problem investigating facility. The magnitude of impact thus decided may be as follows:

PRIORITY OF IMPACT	MEANING
1	Major impact. The problem totally prevents the functioning of a hardware device, software task or production process. No alternative is available.
2	Minor impact. The problem inhibits normal functioning. Alternative is available to work at a reduced level of efficiency.
3	Marginal impact. The problem is limited to a marginal task or part of a device. Overall performance is not impacted.

It is also the responsibility of the PDR coordination group to identify the responsible area and the group responsible for fixing the problem. The responsible area and impact fields are filled in by the PDR coordination group and the PDR form is sent over for problem analyst assignment. Simultaneously, the pink copy is ripped off and used for data entry into the PDR data base. If the area assignment is improper the PDR form may come back to the PDR coordination group for reassignment.

d. When the area responsible for fixing the problem receives the PDR, assignment of the problem analyst is done.

e. The problem solver, after solving the problem, sends the PDR form for solution concurrence.

f. The solution concurree, in most cases, will be the problem analyst assigner. After the solution concurrence, the PDR is sent over to PDR coordination. This constitutes the solution notification.

g. After a solution has been found, PDR resolution is determined. Responsibility for PDR resolution will be assigned by operations. The status of the PDR is then changed to OPEN - TO BE INSTALLED (TBI) from the earlier OPEN - UNDER INVESTIGATION (UI).

h. The PDR coordination group sends the PDR form to the implementor. Implementation may consist (for example) of changing a part or a circuit board in case of a hardware problem, or it could mean updating the system library software with the new version of the software, in the case of a software problem. Once the fix is implemented the PDR form is sent over to the PDR coordination group, notifying them of fix implementation.

i. At this stage the status of the PDR in the data base is changed to OPEN - QUALITY ASSURANCE REVIEW (QAR).

j. The Quality Assurance personnel make sure that the standard operating procedures have been complied with and that the fix has, in fact, been implemented and is acceptable. Then the PDR form is sent back to the PDR coordination group.

k. After quality verification, the status of the PDR is changed to CLOSED, which means that all the action on the PDR is completed. The white form is retained by the PDR coordination group for historical purposes. The green copy is sent back to the initiator, which serves as the feedback to the initiator. For product PDRs, this copy may also be used to alert the responsible group to the disposition of the product. Figure 20-6 shows the various PDR statuses and their meanings.

20.4.1.1 PDR Form

The PDR form shown in Figure 20-7 is used to identify a defect or discrepancy. All the items or boxes marked by an asterisk (*) must be filled in by the initiator, if applicable. The various fields on the PDR form are as follows:

STATUS	MEANING
OPEN	
• UI	UNDER INVESTIGATION
• QAR	QUALITY ASSURANCE REVIEW
• TBI	TO BE INSTALLED
CLOSED	PDR CLOSED - ALL ACTION COMPLETED

Figure 20-6. Problem-Defect Report Status Types

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PROBLEM DEFECT REPORT

PDR NO. ____________

* DATE OPENED (DDMMMYY) 1	* TIME OPENED (HHMM) 2	PRIORITY 3

* FACILITY 4	* SUBSYSTEM 5	* PROCESS 6	RESPONSIBLE AREA 7

* ☐ HARDWARE 8	* ITEM ID (NOMENCLATURE & UNIT NUMBER) 9	* SERIAL NUMBER 10	
* ☐ SOFTWARE 11	* PROGRAM NAME 12	* VERSION NUMBER 13	
* ☐ PRODUCT 14	* PROC. REQ. ID 15	* INPUT TAPE/ROLL ID 16	* OUTPUT TAPE/ROLL ID 17
* ☐ OTHER 18	* NAME 19	* IDENTIFICATION 20	

* DEFECT(S)
SUMMARY DESCRIPTION (25 CHARACTERS) RESERVED 21i 21ii
DETAILED DESCRIPTION 21iii

REPORTED BY ______ 22 EXT ______ 23 SUPERVISOR ______ 24 DATE/TIME ______ 25 PDR COORD ______ 26 DATE/TIME ______ 27

ANALYSIS/CAUSE ANALYZED CATEGORY ☐ HARDWARE ☐ SOFTWARE 32 ☐ PRODUCT ☐ OTHER
28

ANALYZED BY ______ 29 EXT ______ 30 DATE/TIME ______ 31

CORRECTIVE ACTION/PRODUCT DISPOSITION
33

CORRECTED BY ** ______ 34 EXT. ______ 35 DATE/TIME ______ 36
SUPERVISOR ______ 37 EXT ______ 38 DATE/TIME ______ 39

PDR CLOSEOUT

SYSTEM IMPLEMENTION ______ 40 EXT ______ DATE/TIME ______
PDR COORDINATION ______ 41 EXT ______ DATE/TIME ______
QUALITY ASSURANCE VERIFICATION ______ 42 EXT ______ DATE/TIME ______

*MUST BE FILLED IN BY THE INITIATOR, AS APPLICABLE. ** CORRECTED BY, EXT., AND DATE/TIME NOT USED IF PRODUCT TYPE.
NOTE 1: DATA/TIME IS OF FORM DDMMMYY/HHMM WHERE HHMM≤2359 NOTE 2. PRINT ALL NAMES OF PERSONS

Figure 20-7 . PDR Form

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BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
1	Date Opened	(7)	Month, day, year on which the problem is detected (DDMMMYY) DD = Day MMM = month (i.e. Oct) YY = year
2	Time Opened	(4)	Time of day when the PDR form is filled in for the first time (HHMM) HH = hours, MM = minutes (i.e., 2341) MM = minutes
3	Priorities	(3)	Priorities: P1 = critical (to development) P2 = non-critical (to development), assigned by program or respective I&T manager
4	Facility	(3)	The facility reporting the problem (MMF, CSF, IGF, etc.). See memo 1N42-LSD-QA-MEMO-254 for complete list of applicable field entries.
5	Subsystem	(3)	Subsystem where the problem originated. In cases other than software "N/A" applies in this block. See Memo 1N42-LSD-QA-MEMO-254 for complete list of applicable field entries.
6	Process	(3)	Process in which the problem was discovered. In cases other than software "N/A" applies in this block.
7	Responsible area	(7)	Facility and category, a subset of responsibility within the Facility and who is responsible for fixing the problem. The category is a subset of responsibility

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BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
			within the facility. See Memo 1N42-LSD-QA-MEMO-254 for complete list of applicable field entries.
8	Hardware	(1)	Place "X" in this box if the defect is with hardware, then complete the rest of the line.
9	Item ID	(4)	Name or nomenclature of the failed part or unit
10	Serial number	(6)	Serial number of the failed unit
11	Software	(1)	Place "X" in this box if the defect is with software, then complete the rest of the line
12	Program Name	(15)	Mnemonic program name
13	Version Number	(3)	Version number of the program
14	Product	(1)	Place "X" in this box if the defect is with product or during production run
15	Proc. Req. ID	(12)	Process request ID
16	Input Tape/Roll ID	(12)	Identification for the input tape or film roll of the production run
17	Output Tape/Roll ID	(12)	Identification of the output tape or roll of the production run
18	Other	(1)	Place "X" in this box if the defect is other than hardware, software or product. Anomaly in documentation,

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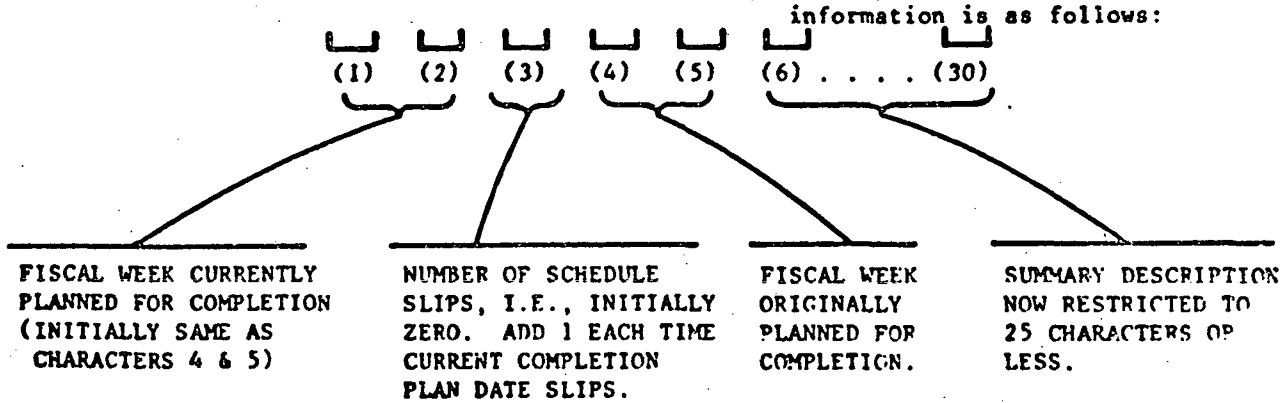
BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
			procedure etc., could be accommodated here
19	Name	(10)	Item name or nomenclature
20	Identification	(13)	Reference document or identification number

(CONTINUED ON NEXT PAGE)

BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
21	Defect	(5)	

(i.) The first five characters of the 30-character PDR summary description to convey this information is as follows:



(ii.) The summary description is a one line 25 characters summary of the discrepancy. This description is to be filled in capital letters. This is the description which will appear on the PDR reports. The summary description will eliminate judgement on the part of the data entry person, in summarizing the description.

(iii.) The detailed description is a clear and concise description of the discrepancy. What is defective and how it is defective is to be filled in here.

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BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
22	Reported by	(10)	Initiator's signature
23	Ext	(4)	Initiator's telephone extension
24	Supervision	(10)	Concurring supervisor's signature
25	Date/time	(7)(4)	Date and time of management signature
26	PDR coord	(10)	Signature of the PDR coordinator
27	Date/time	(7)(4)	Date and time of the problem by the analyst in the investigating area
28	Analysis	(288)	Analysis of the problem by the analyst in the investigating area
29	Analyzed by	(10)	Name of the individual performing the problem analysis
30	Ext	(4)	Analyst's phone number
31	Date/time	(7)(4)	Date and time the analysis is performed
32	Analyzed Category	(1)	The individual performing the analysis will check one of the four categories which was found to be the actual cause of the problem.
33	Corrective Action	(288)	Concise description of the corrective action taken. Primarily refers to hardware, software or other.
	Product Disposition	(288)	For PDRs involving products, disposition of the product

BLOCK NO.	BLOCK NAME	FIELD LENGTH	DESCRIPTION
34	Corrected by	(10)	The name of the individual effecting correction to the problem.
35	Ext	(4)	The corrector's phone number
36	Date/time	(7)(4)	The date and time the correction was performed
37	Supervisor	(10)	The supervisor for the individual performing the correction
38	EXT	(4)	The supervisor's extension
39	Date/time	(7)(4)	The date and time of management concurrence
40	System Implementation	(10)	After the fix is implemented the implementer should sign here with his extension and date/time.
41	PDR coordination	(10)	PDR coordinator's signature when the PDR is sent for Quality Verification with his extension and date/time.
42	Quality Assurance Verification	(10)	After ensuring procedure compliance with QA person signs here, initiating PDR closeout with his extension and date/time.

All the fields appearing on the form will be entered into the data base. Thus a reasonable copy of the PDR form can be regenerated if the original is lost.

20.4.1.2 PDR Reports

The PDR reports are the tools used for tracking and status accounting. They

help in exercising management control over the resolution of the PDRs within a specified time period. Various types of reports can be generated. Specific reports cater to the needs of specific audiences; some are for higher level management and others are for operating personnel.

Criteria for choosing reports are threefold:

a. OPTION: Choice of different types of reports

b. SELECT: Choice of further subtypes within a report

c. SORT: Ability to order a report on certain fields.

Figures 20-8 through 20-10 describe the details of each of the above criteria.

As can be seen in Figure 20-8, there are five types of reports. Each of these is described.

20.4.1.2.1 <u>Open Problem Defect Report</u>

Figure 20-11 shows the format of the Open Problem Defect Report. The run criteria for getting this report appear at the bottom of the page. The option is 'OPEN' and date parameters are from D1M1Y1 to D2M2Y2. Thus the report obtained is an Open Problem Defect Report for the period D1M1Y1 to D2M2Y2, as seen at the top of the report. The RESP. AREA identifies the investigating facility and category. The example represents the selection IGFS1MX, which means the investigator is IGF and the category within 'IGF' is software type 1; i.e., S1. 'M' stands for MSS sensor. 'X' is the field reserved for future use. FACILITY, SUB, SYS., and PROC. represent the facility, subsystem and process, respectively, where the problem originated. PDR NO. is self-explanatory. DATE

OPTION NAME	MEANING
(1) OPEN	OUTPUT ONLY OPEN PDR'S
(2) CLOSED	OUTPUT ONLY CLOSED PDR'S
(3) SUMMARY	OUTPUT ONLY PDR SUMMARY
(4) STATUS	OUTPUT ONLY PDR STATUS MATRIX
(5) ANALYSIS	OUTPUT ONLY PDR TIME ANALYSIS
(6) ALL	OUTPUT ALL THE ABOVE REPORTS
(7) OPEN/STATUS	OUTPUT ONLY OPEN PDR's AND PDR STATUS MATRIX

Figure 20-8. Options

SELECTION NAME	MEANING
(1) DATE	FOR A GIVEN OPTION/REPORT SELECTION BY DATE PARAMETERS EG: FROM D1 M1 Y1 TO D2 M2 Y2
(2) RESPONSIBLE AREA	SELECT BY INVESTIGATING FACILITY AND CATEGORY DEFAULT - ENTIRE GROUND SEGMENT

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Figure 20-9. Select

SORT NAME	MEANING
(1) PRIORITY OF IMPACT	SORT BY PRIORITY OF PDR & SUBSORT BY PDR NO.
(2) PDR NUMBER	SORT BY PDR NUMBER
(3) DATE OPENED	SORT BY ASCENDING DATE

DEFAULT SORT IS PRIORITY OF IMPACT

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Figure 20-10. Sort

REPORT :
SUBSYSTEM: RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

LANDSAT-D OPEN PROBLEM DEFECT REPORT

PERIOD: FROM D1M1Y1 TO D2M2Y2

PAGE:
DATE:

RESP. AREA	FACILITY	SUB.SYS	PROC.	PDR NO.	DATE OPEN	PROBLEM DEFECT STATEMENT	PRIORITY	STATUS & DAYS	
IGFSINX	MMF	RSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	UI	002
	IGF	MIPS1		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	TBI	005
	MMF	DAS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	TBI	003
	CSF	FSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	UI	003
	MMF	GMS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	UI	006
	MMF	GMS	R TO A	XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	QAR	002
	CSF	PES		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	UI	004
	MMF	FMS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	TBI	007
	MMF	FMS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	UI	003
	IGF	MIPS2		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	TBI	003
	MMF	RSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	QAR	005
	CDF	TSIM		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	TBI	007
	IGF	PCS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	QAR	008
	MMF	DAS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	UI	004
	CSF	FSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	UI	002
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TOTAL NUMBER OF PDR'S OPENED IN THIS AREA : ________________

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RUN CRITERIA : OPTION = OPEN ; SELECT = DATE D1M1Y1 TO D2M2Y2 ; RESP. AREA = IGFSINX; SORT = PRIORITY & PDR NO.

STATUS : UI = UNDER INVESTIGATION, TBI = TO BE IMPLEMENTED, QAR = QUALITY ASSURANCE REVIEW

Figure 20-11. Open Problem Defect Report

OPEN is the date on which the PDR was opened. PROBLEM DEFECT STATEMENT is the summary description picked up from the PDR form. PRIORITY is the impact. The last column gives the status and days. STATUS is the open PDR status (e.g., UI for Under Investigation, TBI for To Be Installed, QAR for Quality Assurance Review). DAYS stands for the number of days between D2M2Y2 and the last status change. Thus, it gives the number of days the PDR has spent in the status. The total number of open PDRs in the responsible area is also provided at the bottom of the report. This report helps in tracking the PDRs.

20.4.1.2.2 Closed Problem Defect Report

Figure 20-12 shows the format of this report. The column headings of this report and the Open Problem Defect Report are similar, with the exception of the last column. The last column in this report gives the date on which the PDR was closed instead of STATUS & DAYS as in the open problem defect report. The sort chosen is the default sort which is priority and PDR No. All the PDRs with priority of 1 appear at the top, those with priority 2 will follow, and the PDRs with priority 3 appear at the bottom. The PDRs within each priority are also sorted.

20.4.1.2.3 Problem Defect Report Status

Figure 20-13 represents the status matrix of investigating area vs. PDR status. The total number of PDRs in each status for each responsible area and the corresponding totals are provided in this report.

SUBSYSTEM: RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

LANDSAT-D CLOSED PROBLEM DEFECT REPORT

PERIOD: FROM D1M1Y1 TO D2M2Y2

PAGE:
DATE:

RESP. AREA	FACILITY	SUB.SYS	PROC.	PDR NO.	DATE OPEN	PROBLEM DEFECT STATEMENT	PRIORITY	DATE CLOSED
CSFM2TX	NMF	RSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	IGF	MIPS1	PEPG	XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	NMF	DAS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	CSF	FSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	NMF	GNS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	NMF	GNS	R TO A	XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	1	XX-XX-XX
	CSF	PES		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	XX-XX-XX
	NMF	FMS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	XX-XX-XX
	NMF	FMS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	2	XX-XX-XX
	IGF	MIPS2	MCCA	XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	NMF	PSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	CSF	TSIM		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	IGF	PCS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	NMF	DAS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	CSF	FSS		XXXXXX	XX-XX-XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	3	XX-XX-XX
	...	...		......	.. .. ..	....	.	.. .. ..
	...	...		......	.. .. ..	....	.	.. .. ..
	...	...		......	.. .. ..	....	.	.. .. ..
	...	...		......	.. .. ..	....	.	.. .. ..
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	...	...		......	.. .. ..	....	.	.. .. ..
	...	...		......	.. .. ..	....	.	.. .. ..
	...	...		......	.. .. ..	....	.	.. .. ..

TOTAL NUMBER OF PDR'S CLOSED IN THIS AREA : ________________

RUN CRITERIA : OPTION = CLOSED ; SELECT = DATE D1M1Y1 TO D2M2Y2 ; RESP. AREA = CSFM2TX; SORT = PRIORITY & PDR NO.

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Figure 20-12. Closed Problem Defect Report

REPORT :
SUBSYSTEM: RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

LANDSAT-D PROBLEM DEFECT REPORT STATUS

AS ON DDMMYY

PAGE:
DATE:

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RESPONSIBLE	STATUS					TOTAL
AREA	OPEN				CLOSED	
	UI	TBI	OAR	TOTAL		
CSF	10	3	4	17	10	27
ICF	7	2	1	10	4	14
MMF	5	2	1	8	4	12
LAS	9	4	2	15	5	20
TGS	8	6	4	18	4	22
...	.	.	.	.	.	..
...	.	.	.	.	.	..
...	.	.	.	.	.	..
TOTAL	..	..	..	..	..	...

RUN CRITERIA : SELECT = DATE - DDMMYY, RESP,AREA - ALL

STATUS : UI = UNDER INVESTIGATION, TBI = TO BE IMPLEMENTED, OAR = QUALITY ASSURANCE REVIEW

Figure 20-13. Problem Defect Report Status

20.4.1.2.4 Problem Defect Report Summary

Figure 20-14 shows the format of PDR summary. CUR TOTAL # OF OPEN PDRs represents the current total number of PDRs opened from inception to D2M2Y2. The next two columns give the number of PDRs opened and closed in the selected period (i.e., D1M1Y1 to D2M2Y2). The difference between these two fields appears as net gain or loss. The last column gives the total number of PDRs to be purged. If X represents the number of days after PDR closure, before the information on the PDR is removed from the data base and put onto tape (i.e., purged), then the last column would give the number of PDRs closed for more than X days that are still in the system and are to be purged to tape.

20.4.1.2.5 Problem Defect Report Analysis

The format of this report is shown in Figure 20-15. The report gives a time anlaysis of open PDRs for each investigating area. The number of PDRs open in various time spans is the content of this report. For the first quarter the breakdown is in terms of two weeks, for the second quarter in terms of four weeks and then in terms of quarters for the third and fourth quarters. The PDRs remaining open for over one year are in the last column.

20.4.2 ESR GENERATION AND CONTROL SCENARIO

20.4.2.1 ESR Form

The ESR maintenance process will accept, as input, the information written on an ESR report form, and it will be stored in the MMF-T data base. The ESR records will contain a description of the problem, corrective action and materials used. Additionally, the person(s) who initiates the ESR, approves and performs the

REPORT #
SUBSYSTEM: RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE:
DATE:

LANDSAT-D PROBLEM DEFECT REPORT SUMMARY

PERIOD: FROM D1M1Y1 TO D2M2Y2

RESP. AREA	CUR. TOTAL # OF OPEN PDR'S	CUR. TOTAL # OF CLOSED PDR'S	TOTAL # OF PDR'S OPENED THIS PERIOD	TOTAL # OF PDR'S CLOSED THIS PERIOD	NET GAIN(+) OR LOSS (-)	TOTAL # OF PDRS TO BE PURGED
MMF	100	50	20	20	0	3
CSF	50	25	10	5	+5	2
LAS	25	10	5	7	-2	1
TOTAL	175	85	45	32	+3	6

RUN CRITERIA : SELECT = DATE D1M1Y1 TO D2M2Y2

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Figure 20-14. Problem Defect Report Summary

REPORT 1
SUBSYSTEM: RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE:
DATE:

LANDSAT-D PROBLEM DEFECT REPORT ANALYSIS

TOTAL NUMBER OF OPEN PDR'S IN THE PERIOD

WEEK OPEN --> RESP. AREA	1-2	3-4	5-6	7-8	9-10	11-12	13-16	17-20	21-24	25-28	29-40	41-52	53+
NMF	3	2	1		1		7						
CSF	4	3	2		3		1	1					
LAS	1	2	3			5				5			

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Figure 20-15. Problem Defect Report Analysis

work required, and closes the ESR, will be indicated. All equipment will be identified by serial number. Included on the ESR will be the time of failure and the time of return to service. See Figure 20-16 for the ESR form.

20.4.2.2 ESR Reports

The ESR report process will print ESRs for a specified date range. The report process will optionally contain open and/or closed ESRs. Additionally, reports can be generated containing the facility/designation number, unit serial number and textual description of the equipment defect. This last report may be sorted on facility/description number or serial number. See Figures 20-17 and 20-18 for the various ESR reports.

TBS

Figure 20-16. ESR Form

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REPORT : RN1760
SUBSYSTEM : RSS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 6
DATE : 14-OCT-81
TIME : 14:07

EQUIPMENT CONFIGURATION REPORT
SORTED BY
EQUIPMENT DESIGNATION FACILITY

DESIGNATION FACILITY	DESIGNATION DESCRIPTION	UNIT NUMBER	UNIT DESCRIPTION
TGSTU45MTAD	TAPE DRIVE	8000000105	TAPE DRIVE
TGSVAX11-780	CPU	8000000021	CAN'T BOOT CPU
	CPU	8000000021	CPU
TGSVAX11/780	TAPE UNITS	8000000022	SYSTEM CRASH
	TAPE UNITS	8000000022	TAPE UNIT
TGSVT 78	PDP/34	8000000072	PDP/34
TGSVT-100	DISPLAY	8000000106	DISPLAY

TOTAL RECORDS PROCESSED 47

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Figure 20-17. Equipment Configuration Report

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

EQUIPMENT SERVICE OPEN/CLOSE REPORT

ESR NUMBER	UNIT AFFECTED	EQUIPMENT FACILITY	DOWN DATE TIME	INITIATOR OF ESR	INITIATOR DATE
1	00000001	MMF000000001	810010101	J. SMITH	81001

FAILURE CLASS	DOWN SUPERVISOR	SUPERVISOR DATE	ENTRY DATE
1	L. SMITH	81002	81002

SERIAL NUMBER	UP SUPERVISOR	SUPERVISOR DATE	REFERENCE NUMBER
0000000001	R. SMITH	81002	2

COMPLETION NAME	COMPLETION DATE	UP REF NUMBER	UP DATE TIME
C SMITH	81002	0	810020101

REPAIR CODE	CLOSEOUT DATE	CLOSEOUT NAME
1	81001	J. SMITH

PROBLEM
TEXT

LIGTHNING PASSED THRU EQUIPMENT AS STORM PASSED OVERHEAD

ACTION
TEXT

BOARD 8000000001 REPLACED AND WIRING REPAIR BY DIGITIAL EQUIPMENT CORPO
ATION

CIRCUIT DESIGNATOR	QUANTITY USED
DEC001	9

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Figure 20-18. Equipment Service Report (Open - Close)

SECTION 21

DATA BASE MAINTENANCE

21.1 ENVIRONMENT/RESOURCES

The Ground Segment provides separate data bases for support of the MSS and the TM image data handling control functions. The data bases support user requirements processing, image acquisition planning and scheduling, production management, inventory control and management reporting. The data bases are maintained on the DEC2050 in MMF-M and the DEC2060 in MMF-T. DBMS-20 is the software package that handles all access to the data base and is used in the implementation of MMF applications. Data base updates are entered by means of computer-to-computer data link, CCT, interactive terminal, and punched cards.

The data base itself is supported by the data base administrative subsystem (DAS). The DAS provides and maintains data base and systems software to support the application functions within the MMF for MSS and TM. The DAS interfaces are shown in Figure 21-1. The MMF subsystems are:

a. Data Base Administration (DAS)

b. Flight Segment Management (FMS)

c. Ground Segment Management (GMS)

d. Request Support Subsystem (RSS).

The interface common to all of these subsystems is the data base. All programs running have access to the data base structure, formats, and data. The DAS does not have any interfaces external to the MMF. Data base management is a

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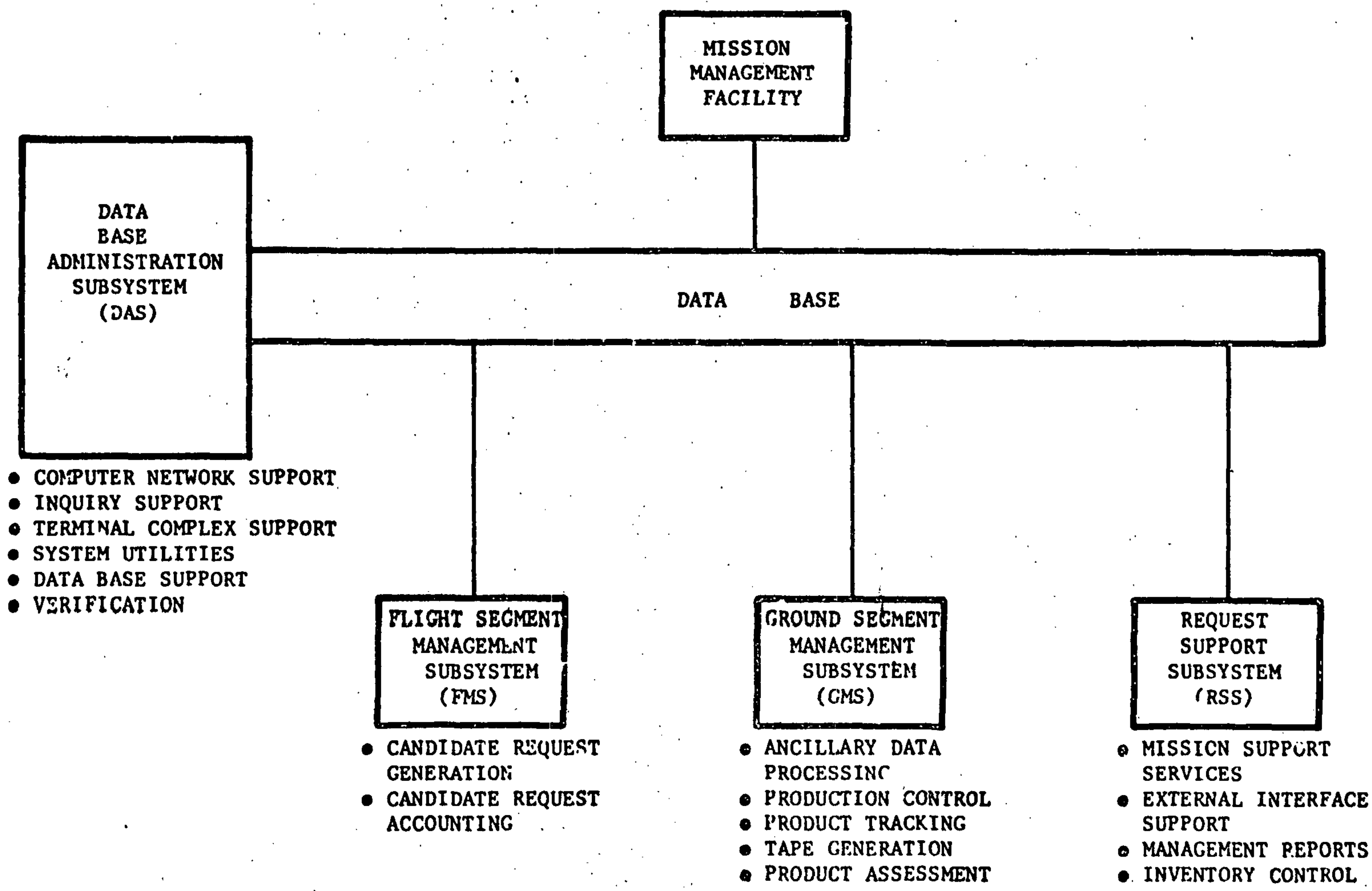

Figure 21-1. MMF Software Diagram

continuous process that began with initial developmental software and continues through the life of the project. This section describes the DAS and discusses in detail the operational process of data base support and verification. Application utilities are not discussed in detail.

21.2 OVERVIEW/BACKGROUND

All mission management and production control functions of Landsat-D MMF are implemented using an integrated data base. The data base supports the following functions:

a. User payload and product requirements recording

b. User retrospective requirements recording

c. Mission planning and scheduling support

d. Imagery inventory

e. Archive/product tracking

f. Production control

g. Consumables and spare parts inventory

h. History of user requirements and production control related information

i. Management reporting

   1. Product tracking

   2. Performance reporting

   3. Order tracking

   4. Catalogs

j. Ground control point library processing

k. Problem Defect Report (PDR) and Equipment Service Report (ESR) Tracking

l. Spacecraft parameter maintenance

m. Version number control.

21.3 FUNCTIONAL DESCRIPTION

21.3.1 DBMS SPECIALIST

The DBMS specialist, working under the software engineering supervisor in the engineering support group, is responsible for administration of the data base throughout the Ground Segment. The DBMS specialist is responsible for:

a. Providing expertise in DBMS application software

b. Maintaining data base schema and data base access documentation

c. Monitoring data base status and establishing corrective action procedures when required

d. Updating special purpose DBMS software.

The data base is centrally configured and controlled by a network data base management system. All application activity and software will interface with the data base through the DBMS specialist, who functions as the data base manager.

21.3.2 DATA BASE ADMINISTRATION SUBSYSTEM (DAS)

The DAS is that portion of MMP which:

a. Interfaces application software programs with the physical data base

b. Maintains integrity of the data base

c. Supports restructure of the data base

d. Implements system programs to achieve proper system operation

e. Provides system utilities for use by application programs.

The DAS is divided into six functional areas (Figure 21-2):

a. Computer network support

b. Systems utilities

c. Terminal complex support

d. Data base support

e. Inquiry support

f. Verification.

21.3.2.1 Computer Network Support

The DAS supports electronic and magnetic tape computer-to-computer interfaces between the MMF control processing units (CPU) and each one of the CPUs for the CSF, MIPS, TIPS and DRRTS. This interface software provides the means by which data is transferred from one computer to another.

21.3.2.2 Systems Utilities

Systems utilities provide system administration support and applications support. These software packages are purchased from DEC.

21.3.2.2.1 System Administration Support

a. Incremental and full disk saves (fast disk to tape copies and vice versa)

b. Systems performance reporting (system load, disk usage, etc.)

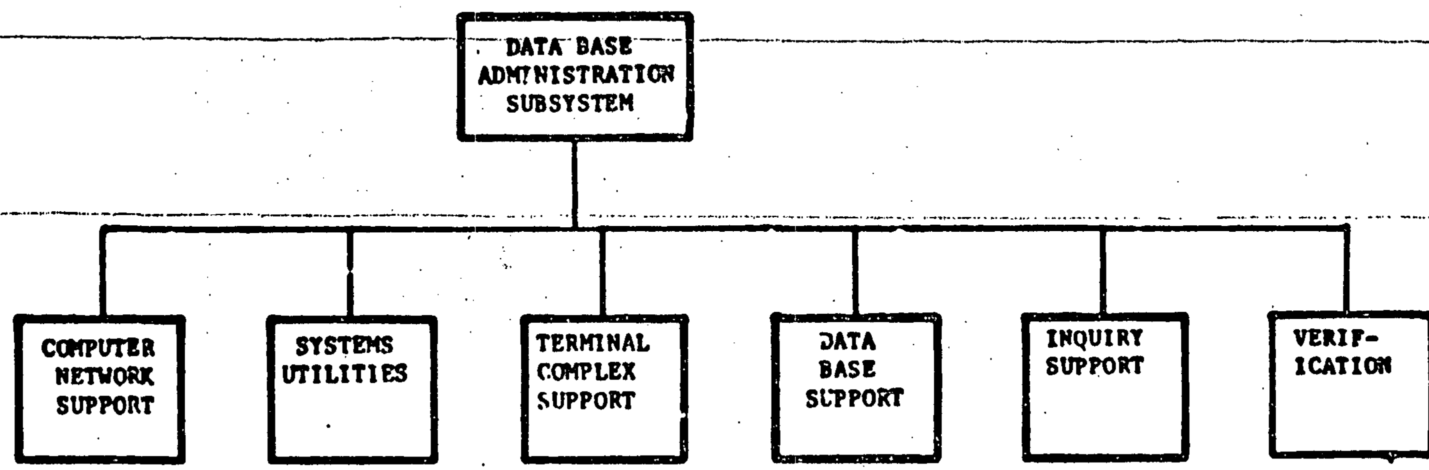

Figure 21-2. DAS Functional Configuration

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c. Tape to tape copy

d. DEC20 operations log (listing of jobs run and pertinent statistics)

21.3.2.2.2 Applications Support

a. Generalized disk file sort (sort of sequential disk files by combinations of variable keys)

b. Octal file dump (dump files in octal format on line printer)

c. Application utilities (routines to perform date/time conversions and generate and process ID numbers)

d. Version control utilities (provide configuration control).

21.3.2.3 Terminal Complex Support

The terminal complex consists of a VT78 KCRT terminal, GE Terminet-300 split-platen printer and Recognition Products OCR wand reader, which support the following functions:

a. OCR readable label printing

b. Low speed work order or report printing

c. OCR input to programs running on MMF computer

d. Hard copy snap-shot of screen

e. Program control over all terminal complex peripherals.

21.3.2.4 Data Base Support

Data base support provides the operational procedures and software for data base maintenance (Figure 21-3).

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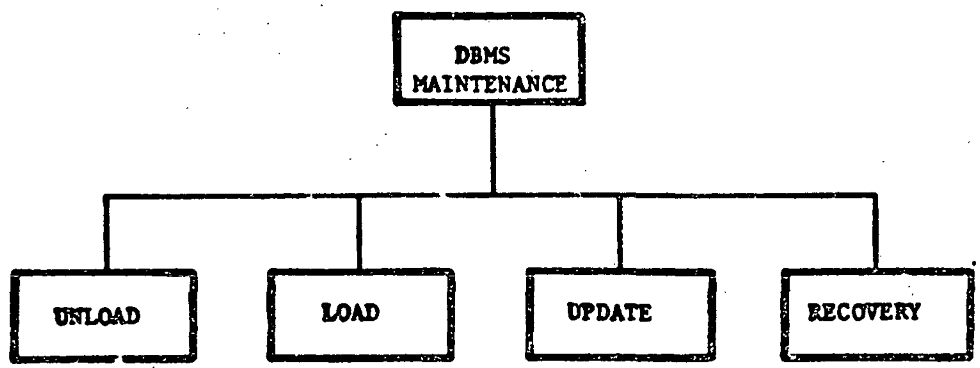

Figure 21-3. DBMS Support Structure

21.3.2.4.1 Data Base Load

Data base load provides the capability to load the data base from a sequential text editable file or from the data base unload process output. The load process is operable if the data base is empty (initial load) or if the data base is being updated. The load process uses sequential input to structure the data base and maintain relationships between the record types. It also detects contextual inconsistencies between the input data and previously loaded data.

21.3.2.4.2 Data Base Unload

Data base unload provides the capability to unload the data base onto disk. The unloaded disk file is copied to tape for archival storage. The unload is a formatted copy that preserves the linkage that existed on the data base and is compatible with the data base load.

21.3.2.4.3 Data Base Update

Data base update provides for the online retrieval of any record on the data base, and also the capability to add, delete, and/or modify records on the data base.

21.3.2.4.4 Data Base Recovery

Data base recovery provides the capability to restore the data base to the valid state that existed immediately before the execution of a module that was aborted. An audit trail (journal) is kept of all updates to the data base. This journal provides the input needed to restore the data base to a valid state. The journal file provides before and after pictures of the affected areas of the

data base at any time during an update. Recovery of the data base may be by semi-automated "backout" of the program running at the time of the crash or, in the case of the destruction of information on the disk packs, the data base may be restored from an old save tape merged with the journal. The journal files are stored on disk files and saved onto tape at the same time as the data base.

Journaling is provided by the DEC DBMS-20 software package. It is a copy file in all application programs that access the data base.

31.3.2.5 Inquiry Support

Inquiry support provides a method by which users can retrieve data in report format from the data base via a high level user-oriented language. Interactive query language - 20 (IQL) allows quick inquiries against the data base. The DAS maintains the IQL dictionary for the data base.

21.3.2.6 Data Base Verification

Data base verification provides the tools required to ensure the retrievability of all data base records. The data base verification package consists of the following programs:

a. Area record summary by set - this program can be run for all areas or for selected areas. It searches an area through the set chains, counting the records and producing a tally of occurrences found by record type and by area.

b. Area record summary by area - this program can be run for all areas or for selected areas. It sequentially searches data base areas and

counts the records. Tallies are produced by record type and by area.

The two programs above validate the integrity of the physical disk and the retrievability of all data base records. If the two types of record summaries differ, then the chain chaser can be executed to isolate the problem.

c. Chain chaser - the production area sets which undergo frequent data base updates are validated by chain chaser. The program compares record identifiers with the data base pointers to ensure that the pointers resolve to the correct owner. This determines if the application programs are performing data base updates correctly in the production and archive areas.

d. Main image bit verifier dump - this program unloads main image records for a specified time interval and writes them to tape.

e. Main image bit verifier comparator - this program takes the output of the main image bit verifier dump and compares it bit by bit with corresponding main image records in the online data base. The comparison determines when differing information is, in fact, a data base inconsistency.

21.4 PROCESS OPERATIONS

Each data base (TM and MSS) is further divided into a production section that contains mission oriented data, and a cross reference section that contains data for data base administration. Figure 21-4 shows a breakdown of data base management programs.

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PRODUCTION DATA BASE

- AREA RECORD SUMMARY
  - BY SET
  - BY AREA
- CHAIN CHASER
- MAIN IMAGE BIT VERIFIER
  - DUMP
  - COMPARATOR
- LOAD
- UNLOAD
- UPDATE

CROSS REFERENCE DATA BASE

- LOAD
- UNLOAD
- DICTIONARY REPORTS
  - DBA REPORT
  - DICTIONARY REPORT
- X-REF REPORTS
  - SCHEMA DUMP
  - AREA/RECORD X-REF
  - RECORD/FIELD X-REF
  - COPY FILE/FMODULE X-REF
  - SUBROUTINE X-REF
  - SUBSCHEMA/MODULE X-REF
  - AREA/MODULE X-REF
  - RECORD/MODULE X-REF
  - FIELD/MODULE X-REF
  - BUILD LINE COUNT
  - MODULE LINE COUNT

Figure 21-4. Data Base Maintenance/Verification Programs

21.4.1 PRODUCTION DATA BASE LOAD (DBLOAD)

21.4.1.1 Summary

DBLOAD reads all records from the input file and checks the record type to verify that the records are in the correct sequence. DBLOAD checks for a valid area ID, opens the area for protected update, checks for valid data base record type, and stores the record. If an owner cannot be found or if there are any data base errors, an error message is displayed and DBLOAD aborts. For each trailer record, DBLOAD checks the area ID and closes the area. At the end of processing a summary report is generated listing record load totals by area.

21.4.1.2 Input

Sequential file of the data base.

21.4.1.3 Output

a. Updated data base

b. Area summary report file (Figures 21-5 and 21-5a) that contains:

   1. Record names and totals for each area loaded

   2. Record load totals as special on trailer records

   3. Grand total for all records loaded.

c. Error file - containing all records found to be in error.

21.4.1.4 Operational Sequence

With a sequential file of data to be loaded on disk files, the operator logs in, then keys in:

```
RUN DBLOAD
```

and the program is executed.

SUBSYSTEM : DAS

GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

DATE : 14-DEC-81
TIME : 11:17

DATA BASE LOAD SUMMARY REPORT - VERSION 10

AREA: WRS-PARAMETER

RECORD NAME	RECORD TOTAL ON TRAILER	TOTAL NUMBER OF RECORDS LOADED
WPR-WRS-PARAMETER	6	6
WP2-WRS-PARAMETER-2	56	56
WP3-WRS-PARAMETER-3	20	20
WP4-WRS-PARAMETER-4	120	120
WFD-WRS-FILE-DIRECTORY	8	8
WFN-WRS-PARAM-FILE-NAME	3	3
*** AREA TOTALS ***	213	213

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Figure 21-5. Data Base Load Summary Report

SUBSYSTEM : DAS

GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

DATE : 14-DEC-81
TIME : 11:17

DATA BASE LOAD SUMMARY REPORT - VERSION 10

AREA: INVENTORY

RECORD NAME	RECORD TOTAL ON TRAILER	TOTAL NUMBER OF RECORDS LOADED
IPD-PART-DESCRIPTION	216	216
IPO-PURCHASE-ORDER-LINE-ITEM	218	218
IRH-RECEIVE-HISTORY	223	223
IUS-INVENTORY-USER	8	8
IWH-WITHDRAWAL-HISTORY	8	8
ISP-SPARE-PART	4	4
*** AREA TOTALS ***	677	677
GRAND TOTAL OF ALL THE AREAS	890	890

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Figure 21-5A. Data Base Load Summary Report

21.4.1.5 Control Mechanisms

Several types of messages can result from processing:

a. Informational

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action.

b. Warning

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 21-1).

c. Error

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 21-1).

d. Fatal Errors

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is

Table 21-1. DBLOAD Message/Action Matrix

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CATEGORY	MESSAGE	NONE	RE-RUN	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE-______				X
	FATAL ERROR: DBMS, UNSUCCESSFUL __________ OPERATION				X
	FATAL ERROR: AREA HEADER MISSING ON INPUT, LOAD ABORTED			X	
	FATAL ERROR: INVALID AREA ID ON TRAILEP, LOAD ABORTED			X	
	FATAL ERROR: ________ OWNER RECORD NOT FOUND. KEY = __________			X	
WARNING	WARNING: LAST AREA TRAILER RECORD MISSING			X	
	WARNING: A RECORD ERROR OCCURRED. PRINT DBLOAD. ERT			X	
INFORMATION	INFORMATION: DBLOAD ABORTED BY OPERATOR VIA CTRL-C KEY IN		X		
OTHER	DBLOAD - END OF PROCESSING	X			
	TOTAL RECORDS LOADED = ______	X			

automatically printed on the line printer. Various operator actions are required (see Table 21-1).

21.4.1.6 Program Scheduling

DBLOAD is normally run nightly by batch processing at the direction of the DBMS specialist. Processing time varies from minimal for loading a selected area to hours of wall clock time for loading the fully developed data base.

21.4.1.7 Special Considerations

a. All input records must be grouped together by area. For any one area there should be only one header record and one trailer record, with one or more data records.

b. Before a record may be loaded, all its owners must have been loaded.

c. Even though the location mode of PRO-REQUEST-ORDER-LINK record type is VIA POI-PRO set, on the DBLOAD.DTA file, its record source should immediately follow PAQ or PPD request type record occurrences, not POI-ORDER-ID record type occurrences.

d. This program always creates two print files:

   DBLOAD.SUM which is the processing summary (Figure 21-5)

   DBLOAD.ERT which is the error listing.

   It is necessary to inspect both reports to ensure the DBLOAD was successful.

e. Just before running DBLOAD, make sure that the data base has been successfully saved.

21.4.2 PRODUCTION DATA BASE UNLOAD (DBUNLD)

21.4.2.1 Summary

DBUNLD dumps selected areas of the data base onto a sequential disk file. The file can be copied to tape for backup purposes and used to restore the data base via the DBLOAD program. The unloaded data base records are grouped by area in a format that preserves the linkages that existed on the data base. The order in which records are copied will ensure the integrity of the data base. Verification is performed to detect incorrect owner-member pairs or linkages. DBUNLD produces a summary report that lists for each area the total records unloaded for each record type.

21.4.2.2 Input

Keyboard entry of those data base file names selected by the operator for unloading.

21.4.2.3 Outputs

DBUNLD produces operator displays and disk files. Operator displays are shown in Figure 21-6 and Table 21-2. Files created are listed below:

DBLOAD.DTA - the unloaded sequential form of the data base suitable as input to DBLOAD

DBUNLD.SUM - a processing summary file which lists each area unloaded and corresponding record totals (Figures 21-7 and 21-7a)

DBUNLD.ERT - error report file listing invalid records and explanatory error messages

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PROMPT	RESPONSE	EXPLANATION
ENTER AREA NAME TO BE UNLOADED OR (ALL, END, HELP, NONE)	AREA NAME	Enter MMF data base area name to be unloaded
	ALL	Unload all data base areas
	END	Abort program without processing
	HELP	List all valid data base area names
	NONE	Ends this prompt so that processing will begin.
DO YOU WANT TO UNLOAD ANY MORE AREAS (Y OR N)	Y	Will cause area name prompt to be redisplayed for unloading more areas.
	N	Causes unload processing to begin.

Figure 21-6. Operator Prompts for DBUNLD

Table 21-2. Message/Action Matrix

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CATEGORY	MESSAGE	ACTION: NONE	RESPOND PROPERLY	RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE -				X	
	FATAL ERROR: DBMS, UNSUCCESSFUL ____ OPERATION				X	
	FATAL ERROR: ____				X	
WARNING	WARNING: OWNER MISSING FOR ____ RECORD, SKIPPED: ____					X
	WARNING: CALC INCONSISTENCY, CHANGED TO OWNER CALC. RECORD IS ____					X
	WARNING: ERROR IN FINDING OWNER OR CALC INCONSIST. CHECK DBUNLD.ERT					X
	WARNING: ____ AREA IS EMPTY - NO RECORDS UNLOADED					X
	WARNING: ____ AREA - NO DBS FILE EXISTS, NO RECORDS UNLOADED					X
ERROR	ERROR: INVALID RESPONSE -		X			
	ERROR: ____ INVALID AREA NAME, ENTER HELP TO LIST AREA NAMES		X			
INFORMATION	INFORMATION: DBUNLD ABORTED BY OPERATOR VIA CTRL-C KEYIN			X		
OTHER	ENTER AREA NAME TO BE UNLOADED OR (ALL, END, HELP , NONE)		X			
	DO YOU WANT TO UNLOAD ANY MORE AREAS (Y OR N)?		X			
	DUPLICATE AREA NAME, PLEASE ENTER A DIFFERENT AREA		X			
	DBUNLD - END OF PROCESSING	X				

```
LISTING   : DB0210          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :         2
SUBSYSTEM :    DAS                 GODDARD SPACE FLIGHT CENTER                     DATE : 14-DEC-81
                               LANDSAT MISSION MANAGEMENT FACILITY                 TIME :     11:23

                          DATA BASE UNLOAD SUMMARY REPORT - VERSION 10

                                        AREA: MAIN-IMAGE

                      RECORD NAME                      TOTAL # OF RECORDS UNLOADED
                      -----------                      ---------------------------

                    MCP-CTL-POINT-DIR                                 0

                    MDA-ACQUISITION-DATE                              2

                    MDE-ENTRY-DATE                                    1

                    MIA-MAIN-IMAGE                                  103

                    MIO-MAIN-IMAGE-OVERFLOW                           0

                    MPR-WRS                                         111


                    *** AREA UNLOAD TOTALS ***                      217
WARNING: ERROR IN FINDING OWNER OR CALC INCONSISTENCY. CHECK DBUNLD.ERT FILE
```

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Figure 21-7. Data Base Unload Summary Report

```
LISTING   : DB0210          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :          3
SUBSYSTEM :    DAS                 GODDARD SPACE FLIGHT CENTER                    DATE : 14-DEC-81
                              LANDSAT MISSION MANAGEMENT FACILITY                 TIME :     11:23

                     DATA BASE UNLOAD SUMMARY REPORT - VERSION 10

                                 AREA: PRODUCTION

                     RECORD NAME                   TOTAL # OF RECORDS UNLOADED
                     -----------                   ---------------------------

               PAQ-ACQUISITION-REQUEST                        2
               PPD-PRODUCT-REQUEST                            2
               PPS-PROD-STATUS                                3
               PRO-REQUEST-ORDER-LINK                         2
               PSO-SCHEDULE-ORBIT                             3
               PSP-SCENE-POINTER                              3
               POI-STAND-ORDER-PROD-ID                        3

               *** AREA UNLOAD TOTALS ***                    18

**************************************************************************************************
       GRAND TOTALS      ERROR TOTAL =   10      RECORDS UNLOADED =        607
**************************************************************************************************
```

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Figure 21-7A. Data Base Unload Summary Report

DBUNLD.UIL - user interaction log detailing program prompts and operator responses

21.4.2.4 Operational Sequence

After logging in, the operator can implement DBUNLD by keying in:

@RUN DBUNLD

and then entering correct response to the program prompts (Figure 21-6).

Batch processing of DBUNLD is possible by creating a submit file with operator responses included:

```
@RUN DBUNLD
ALL
@PRINT DBUNLD.SUM
@PRINT DBUNLD.ERT
@PRINT DBUNLD.UIL
```

After these statements have been executed the file DBLOAD.DTA will contain the unloaded data. DISK-TO-TAPE JCL can be added to store the entire MMF data base on tape.

21.4.2.5 Control Mechanisms

Several types of messages can result from processing:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action (see Table 21-2).

b. Warning.

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 21-2).

c. Error.

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 21-2).

d. Fatal Errors.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 21-2).

e. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general information and require no operator action.

21.4.2.6 Program Scheduling

DBUNLD is normally run at night by batch processing at the direction of the DBMS specialist. Processing time varies from negligible for unloading a selected area, to hours of wall clock time for unloading the fully developed data base.

21.4.3 PRODUCTION DATA BASE UPDATE (DBUPDT)

21.4.3.1 Summary

DBUPDT is a code-worded, controlled access program. The DBMS specialist controls the code word. The DBUPDT program provides an authorized user with the following data base access/update functions:

a. Add a new record

b. Delete an existing record and associated members

c. Modify contents of a record

d. Remove a member record from an optional set

e. Insert a record into an optional set

f. Record search/retrieval capabilities:

   1. Direct access for calc records

   2. First/next of an area

   3. First/next of a set (member record types only)

   4. Locate records first/next of an area or set based on any number of user specified search keys

   5. Saved data base key.

The program initially displays a main menu option screen prompting the operator

for the function to be performed and the record type ID to be processed. The functions the operator can select are described in the following paragraphs.

a. FIND

This function allows the operator to retrieve and display any record in the Landsat-D data base. The operator will be prompted for the method of accessing the record or records. The types of record access provided are:

1. FIRST/NEXT of area - The program will retrieve and display each record occurrence found of the specified record type within the area.

2. FIND USING data base key - The record is found using a data base key saved from a previous find operation.

3. FIND CALC record - The program prompts the operator for the key field value which is used to locate the record.

4. FIRST/NEXT of set - For each set in which the record participates as a member, the program will retrieve and display each record found in the set. If the owner of the set is defined as a calc record, the operator will be prompted for the calc key value. The program will then locate the owner record to establish set currency. If the owner is not a calc record then the set currency is assumed to have been established by a previous find operation.

b. ADD

This function allows the operator to add new records to the data base.

If the record type to be added is a member of any set, all owner records must have currency established by previous find operations. The program displays a screen containing the field names and attributes of the record to be added. The format of the screen is the same as the find command, except the field values are empty and the operator can enter data for each field. After the operator has completed a screen's worth of data, the program will validate the input according to the attributes for each field (i.e., numeric checks, date validity, etc.). If any errors are detected, an error message is displayed, the cursor is placed at the field in error and the operator can re-enter the data. If the operator wishes to override the validation checks, the special command 'O' can be entered. After all screens for the record have been completed, the record is stored in the data base.

c. MODIFY

This function allows the operator to modify any existing record in the data base. The record is retrieved and displayed in the same manner as the find command. The only difference is that the operator can change any value of any field displayed on the screen. After all changes have been entered by the operator and validated by the program, the data base record is modified.

d. DELETE

This command allows the operator to delete any record in the data base. The operator must have previously located the record via the

find command and saved the data base key (using the 'V' sub-command). The delete operation will retrieve the record based upon the saved data base key and then display a 'delete confirmation' screen. The operator confirms the delete request by hitting the return key, or cancels the request by hitting the line feed key. If the delete is confirmed, the current record and any members are deleted.

e. REMOVE

This function allows the operator to remove a member record from any optional set. As with the delete command, the record must have been previously located and the key saved, because the remove operation will retrieve the record based on this key. After the record has been located, a 'remove confirmation/menu' screen is displayed to the operator. If the record is a member of more than one optional set, a menu is displayed requesting the operator to select the set from which to remove the record. After the removal set is known, the program prompts for confirmation of the remove operation. If the operator confirms the remove request, the current record is removed from the specified set.

f. INSERT

This function allows the operator to insert a member record into an optional set. The operation is the same as for the remove command except that an "insert confirmation/menu" screen is displayed. Upon operator confirmation, the record is inserted into the specified set.

g. HELP

This command produces another menu from which the operator can select help on the following subjects: FIND, ADD, DELETE, REMOVE/INSERT, SPECIAL OPTIONS, and GENERAL INFORMATION. For each subject, a one page screen of helpful information is displayed to assist the operator in using the program.

h. EXIT

Selecting this command or hitting the line feed key at the main menu causes the program to terminate normally. This involves closing all data base areas and writing processing totals to the summary file.

In addition to these commands, DBUPDT maintains a processing summary of all transactions performed plus a user interaction log of all changes made to the data base.

21.4.3.2 <u>Inputs</u>

Operator specifies processing options and inputs data values on KCRT.

21.4.3.3 <u>Outputs</u>

a. Updated data base

b. Processinsg summary report file that contains:

   1. Record types updated

   2. Processing performed for each record (ADD, DELETE, MODIFY)

   3. Processing totals.

c. User interaction log.

21.4.3.4 Operational Sequence

After logging in on the KCRT, entering:

@RUN DBUPDT

followed by:

(the correct code word)

will initiate DBUPDT.

The DBUPDT menu screen (Figure 21-8) will appear, prompting the operator for the function to be performed and the record ID to be processed.

After the operator has selected the access method and entered any necessary key values, the record is found, retrieved and displayed on the screen. The display format consists of field names, field attributes (i.e., key field, numeric, date filed, etc.) and field values. Since the screen is limited to 15 fields of 40 characters each, the program is equipped with a paging mechanism for viewing records requiring more than one display screen. To page forward (view remaining fields in record) the operator hits the return key; to page backwards (view previously displayed fields) the operator hits the line feed key.

In addition to the paging mechanism, there are several special commands the operator can select to speed up processing and provide additional capabilities. These commands can only be entered in the option field located on line 23, column 80. They are:

E - Program will exit the current command and return to the main menu.

F - Turns search mode off (see 'S' command for more details).

```
DBUPDT ============== LSATD  DATA BASE UPDATE (MENU SCREEN) ============= DBUPDT

               ENTER RECORD TYPE ID: ___

               ENTER ONE OF THE FOLLOWING: 0

                 1 - FIND EXISTING RECORD

                 2 - ADD NEW RECORD

                 3 - MODIFY EXISTING RECORD

                 4 - DELETE EXISTING RECORD

                 5 - REMOVE EXISTING RECORD

                 6 - INSERT EXISTING RECORD

                 7 - HELP

                 8 - EXIT
```


Figure 21-8. Data Base Update Menu

C-11

H - Displays a help menu (see Figure 21-9).

N - Program ends processing of current record and retrieves the next record within the area or set.

O - Operator wants to override input verification normally done by program. This option only has meaning for adding or modifying records.

P - Causes the current screen format to be written to the user interaction log. This allows the operator to make a hardcopy of whatever appears on the screen.

S - Begin search mode. By specifying this option, the operator can search for records having selected field values. A screen will be displayed for the current record type but with the field contents erased. The operator can then enter values into the fields for which matching records will be found. Note that this option is only valid when accessing records by first/next of an area or set. The program compares each record retrieved against the 'mask' record created by the operator, and only displays matching records. The operator can use the 'N' command to page through an area or set displaying each matching record. At any time, the operator can turn search mode off by entering the 'F' command.

V - This causes the data base key for the current record to be stored. The DELETE, REMOVE and INSERT operations use this data base record key for locating the record. This record can also be quickly found later by specifying the data base key direct access mode for the find operation.

```
DBUPDT ============= LSATD  DATA BASE UPDATE (HELP SCREEN 1) ============ DBUPDT

                 SELECT HELP FOR ONE OF THE FOLLOWING: =

                    1 = FINDING AN EXISTING RECORD

                    2 = ADDING NEW RECORD

                    3 = MODIFY EXISTING RECORD

                    4 = DELETE EXISTING RECORD

                    5 = REMOVE/INSERT EXISTING RECORD

                    6 = SPECIAL OPTIONS

                    7 = GENERAL INFORMATION

                    8 = EXIT
```

Figure 21-9. Data Base Update - Help Menu

Figures 21-10 through 21-16 show examples of DBUPDT products with operator prompts.

21.4.3.5 Control Mechanisms

Messages from DBUPDT are generated because of processing errors or to provide more information to the operator. Any edit errors will cause messages to be displayed to the operator. Types of operator messages are explained below:

a. Informational.

   Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action.

b. Warning.

   Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 21-3).

c. Error.

   This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 21-3).

d. Fatal Errors.

   Messages preceded by "FATAL ERROR:" indicate conditions that will

```
DBUPDT -------- LSATD  DATA BASE UPDATE (ACCESS METHOD SCREEN) --------- DBUPDT

                    SELECT ONE OF THE FOLLOWING: _

                     1 - FIRST/NEXT OF AREA
                     2 - FIND USING SAVED DATA BASE KEY
                     3 - FIND FIRST/NEXT OF AWS-APK SET
                     4 - FIND FIRST/NEXT OF APS-APK SET
                     5 - FIND FIRST/NEXT OF AAP-APK SET
```

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Figure 21-10. DBUPDT Access Screen

```
DBUPDT ---------- LSATD  DATA BASE UPDATE (RECORD/FIELD SCREEN) --------- DBUPDT

        RECORD: PAQ-ACQUISITION-REQUEST             FUNCTION: FIND

--------- FIELD NAME ---------  TYPE   ------------ FIELD VALUE --------------
PAQ-MISSION-NUM                 NUMRC  4
PAQ-ORBIT-ID                    NUMRC  03219
PAQ-CURR-PROC-REQ-ID                   ------------
PAQ-DATIME-GENERATED                   80789104520
PAQ-INTERNAL-SCENE-ID                  4T1100100118
PAQ-NASA-SCENE-ID                      ----------
PAQ-PRED-SCENE-CENTER-TIME             80119123456
PAQ-PRODUCTION-STATUS                  CAN
PAQ-HDTP-ID                            ------------
PAQ-HDTA-ID                            ------------
PAQ-HDTA-INTRVL-NUM             NUMRC
PAQ-PRED-CLOUD-CVR                     2
PAQ-QUAD-MAN-CCA          (01)         --
PAQ-QUAD-AUTO-CCA         (01)         --
PAQ-QUAD-MAN-CCA          (02)         --

              ** RECORD CONTINUED ON NEXT PAGE **

INFORMATION: CURRENCY SAVED FOR THIS RECORD
```

Figure 21-11. DBUPDT Find Screen

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```
DBUPDT ---------- LSATD  DATA BASE UPDATE (RECORD/FIELD SCREEN) --------- DBUPDT
                                                         FUNCTION: MODIFY
          RECORD: AAP-ARCHIVE-PROD
--------- FIELD NAME ---------  TYPE  ------------ FIELD VALUE --------------
AAP-HPI                         NUMRC  33300
AAP-DATA-RATE                   NUMRC  43660
AAP-CREATION-DATIME             DATIM  80001130000
AAP-NUM-INTERVALS                      03
AAP-NUM-SCENES                  NUMRC  014
AAP-DATA-SOURCE                        1
AAP-HDTA-ID               (01)
AAP-HDTA-NUM-SCENES       (01)
AAP-HDTA-IRIG-START       (01)             0000000
AAP-HDTA-IRIG-STOP        (01)         00000
AAP-HDTA-ID               (02)
AAP-HDTA-NUM-SCENES       (02)
AAP-HDTA-IRIG-START       (02)
AAP-HDTA-IRIG-STOP        (02)
AAP-HDTA-ID               (03)
                 ** RECORD CONTINUED ON NEXT PAGE **

INFORMATION: RECORD HAS BEEN SUCCESSFULLY UPDATED
```

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Figure 21-12. DBUPDT Modify Screen

```
DBUPDT ---------- USATD  DATA BASE UPDATE (RECORD/FIELD SCREEN) --------- DBUPDT

         RECORD: CCP-COMMON-PARAM                      FUNCTION: ADD

--------- FIELD NAME ---------  TYPE   ------------- FIELD VALUE ---------------
CCP-TYPE-OF-RECORD              *KEY*  ZZZ
CCP-COMMON-PARAM-INFOR
    (CONTINUED)
    (CONTINUED)




                    ** END OF RECORD **

INFORMATION: RECORD HAS BEEN SUCCESSFULLY ADDED TO DATA BASE
```

Figure 21-13. DBUPDT Add Screen

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```
DBUPDT --------- LSATD  DATA BASE UPDATE (REMOVE/INSERT SCREEN) --------- DBUPDT

      RECORD: PAQ-ACQUISITION-REQUEST          FUNCTION: REMOVE

                SELECT ONE OF THE FOLLOWING: -

                  1 - REMOVE FROM THE SET PPS-PAQ



INFORMATION: RECORD HAS BEEN SUCCESSFULLY REMOVED FROM SET PPS-PAQ-PPD
```

Figure 21-14. DBUPDT Remove Screen

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```
DBUPDT --------- LSATD  DATA BASE UPDATE (REMOVE/INSERT SCREEN) ---------- DBUPDT

          RECORD: PAQ-ACQUISITION-REQUEST            FUNCTION: INSERT

                      SELECT ONE OF THE FOLLOWING: -

                        1 - INSERT INTO THE SET PPS-PAQ



INFORMATION: RECORD HAS BEEN SUCCESSFULLY INSERTED INTO SET PPS-PAQ-PPD
```

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Figure 21-15. DBUPDT Insert Screen

```
DBUPDT --------- LSATD  DATA BASE UPDATE (DELETE RECORD SCREEN) --------- DBUPDT
       RECORD: PAQ-ACQUISITION-REQUEST           FUNCTION: DELETE



       HIT RETURN TO DELETE RECORD (AND MEMBERS), OR LINE FEED TO EXIT




INFORMATION: RECORD DELETED (AS WELL AS ALL MEMBER RECORDS)
```

Figure 21-16. DBUPDT Delete Screen

Table 21-3. ssage Action Matrix

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CATEGORY	MESSAGE	NONE	ENTER VALID DATA/COMMAND	RE-RUN	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE- ____					X	
	FATAL ERROR: DBMS, UNSUCCESSFUL ____ OPERATION					X	
	FATAL ERROR: TRAFFIC-20, ____					X	
ERROR	ERROR: CALC RECORD NOT FOUND		X				
	ERROR: INVALID OPTION SPECIFIED		X				
	ERROR: RECORD NOT FOUND USING DATA BASE KEY				X		
	ERROR: NO HELD DATA BASE KEY EXISTS FOR FINDING RECORD		X				
	ERROR: RECORD SPECIFIED IS NOT AN OPTIONAL MEMBER		X				
	ERROR: NO FILEDS FOUND FOR SPECIFIED RECORD TYPE					X	
	ERROR: NO AREA ID FOUND FOR SPECIFIED RECORD TYPE					X	
	ERROR: COULD NOT OPEN AREA ____ STATUS - ____				X		
	ERROR: INVALID DATE ENTERED		X				
	ERROR: DAY-TIME FIELD ENTERED WAS INVALID.		X				
	ERROR: FIELD MUST BE ENTERED		X				
	ERROR: FIELD MUST BE FILLED		X				
	ERROR: ONLY NUMERIC DATA CAN BE ENTERED IN THIS FIELD		X				
	ERROR: RECORD TYPE ID MUST BE ENTERED (I.E, VVN, TPR, ETC.)		X				
	ERROR: RECORD TYPE ID IS INVALID, NOT PART OF SCHEMA		X				
	ERROR: OPERATION MUST BE SELECTED		X				

Table 21-3. Message Action Matrix (Cont'd)

CATEGORY	MESSAGE / ACTION	NONE	ENTER VALID DATA/COMMAND	RE-RUN	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	
ERROR (cont)	ERROR: ATTEMPT TO STORE DUPLICATE RECORD		X				
INFORMATION	INFORMATION: COPY OF SCREEN WRITTEN TO USER INTERACTION LOG	X					
	INFORMATION: CURRENCY SAVED FOR THIS RECORD	X					
	INFORMATION: RECORD HAS BEEN SUCCESSFULLY REMOVED FROM SET ____	X					
	INFORMATION: RECORD HAS BEEN SUCCESSFULLY INSERTED INTO SET ____	X					
	INFORMATION: RECORD HAS BEEN SUCCESSFULLY ADDED TO DATA BASE	X					
	INFORMATION: RECORD HAS BEEN SUCCESSFULLY UPDATED	X					
	INFORMATION: NO CHANGES TO RECORD, NOTHING UPDATED	X					
	INFORMATION: RECORD DELETED (AS WELL AS ALL MEMBER RECORDS)	X					
	INFORMATION: DBUPDT ABORTED BY OPERATOR VIA CTRL-C KEYIN			X			
OTHER	DBUPDT: END OF PROCESSING	X					

cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 21-3).

e. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general information and require no operator action.

21.4.3.6 Program Scheduling

DBUPDT is run only when required and only by the DBMS specialist. Estimated run time is negligible.

21.4.3.7 Special Considerations

Because of the power of DBUPDT to alter the data base, access to the program is strictly limited. The program is code word accessed to provide data base security.

21.4.4 DATA BASE VERIFICATION AREA RECORD SUMMARY BY AREA (DVARSA)

21.4.4.1 Summary

DVARSA determines the number of records for each different record type for all requested areas. It also determines what percentage of the allocated record space is not currently occupied. The first processing step opens the selected

areas in retrieval mode. Messages are displayed when a requested data base file is empty or nonexistent. The second processing step examines the record type of all of the records of each requested area, incrementing the respective record type counter. This step is repeated for each of the requested areas.

The third processing step writes a summary showing the number of the existing records, the estimated maximum number of records the area may contain, and the percentage represented by existing records as compared to estimated maximum. These values are written for each record type as well as for the entire area. When these summary lines are written for all the selected areas, similar information for the collection of the selected areas, as a whole, is written. The program then closes the data base areas, the output file, and the log file and ends processing.

21.4.4.2 Input

The operator enters the specific area to be searched on the KCRT.

21.4.4.3 Output

a. Processing summary
b. Production log summary
c. User interaction log
d. Operator prompts and messages.

21.4.4.4 Operational Sequence

After logging in, enter:

@RUN DVARSA

The following screen will appear:

```
DATA BASE VERIFICATION AREA RECORD SUMMARY BY AREA

     ENTER (00) - IF SATISFIED WITH THIS SELECTION

     ENTER (16) - IF NO AREA IS TO BE SELECTED

     ENTER (17) - IF ALL AREAS ARE TO BE SELECTED

OR

     ENTER THE AREA NO. OF THE AREA TO BE CHANGED
```

AREA NO.	AREA NAME	SELECTED
01	ANCILLARY	NO
02	ARCHIVE-PRODUCT	NO
03	COMMON-PARAMETER	NO
04	DIRECTORY	NO
05	EPHEMERIS-TELEMETRY	NO
06	ERROR-TEXT	NO
07	GHIT	NO
08	GROUND-CTL-POINT	NO
09	HISTORY	NO
10	INVENTORY	NO
11	MAIN-IMAGE	NO
12	PRODUCT-ASSESSMENT	NO
13	PRODUCTION	NO
14	ROUTE	NO
15	USER-SUPPORT	NO

Entering the appropriate numbers will cause the program to search the selected area(s) and produce the output files (Figures 21-17 and 21-18).

21.4.4.5 Control Mechanism

Following is a list of Traffic-20 error messages which appear when an invalid response is keyed in by the operator:

MESSAGE	ACTIONS
Enter numbers only	Enter only numeric values (no alphabetic or special characters allowed)
Field must be filled	Fill up the field (do not try to bypass any character of the field
Lower limit is 99 (any two digits)	Enter a value not less than lower limit
Upper limit is 99 (any two digits)	Enter a value not higher than upper limit
A value must be entered	Enter a value (do not try to bypass) by hitting enter keys, tab, etc.)
Can't back up further	Key in a value (the cursor is at the beginning of the field.).

The following types of operator display and processing summary messages are displayed:

a. Informational - Messages of this type are preceded by the phrase "INFORMATION:", and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action. (see Table 21-4)

LISTING : DV0590
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 2
DATE : 14-DEC-81
TIME : 11:19

LANDSAT-D DATA BASE AREA/RECORD SUMMARY

AREA: WRS-PARAMETER

RECORD TYPE	RECORD COUNT	ESTIMATED MAXIMUM	PERCENT OF ESTIMATED MAXIMUM RECORDS USED
WPR-WRS-PARAMETER	6	10	60.0 %
WP2-WRS-PARAMETER-2	56	60	93.3 %
WP3-WRS-PARAMETER-3	20	20	100.0 %
WP4-WRS-PARAMETER-4	120	150	80.0 %
WFN-WRS-PARAM-FILE-NAME	3	8	37.5 %
WFD-WRS-FILE-DIRECTORY	8	8,000	0.1 %
TOTAL RECORDS IN AREA:	213	8,248	2.5 %

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Figure 21-17. Data Base Area/Record Summary

LISTING : DV0590
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 3
DATE : 14-DEC-81
TIME : 11:19

LANDSAT-D DATA BASE AREA/RECORD SUMMARY

	RECORD COUNT	ESTIMATED MAXIMUM	PERCENT OF ESTIMATED MAXIMUM RECORDS USED
TOTAL RECORDS IN ALL AREAS :	890	17,258	5.2 %

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Figure 21-18. Data Base Area/Record Summary

Table 21-4. Message/Action Matrix

CATEGORY	MESSAGE	DO NOT RE-RUN DVARSA	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL	FATAL ERROR: UNABLE TO	X			X	
	FATAL ERROR: DBMS, ...	X				X
	FATAL ERROR: ERROR IN	X			X	
ERROR	ERROR: ____________ NOT A RECORD OF ____________ AREA	X			X	
INFORMATION	INFORMATION: CONTROL/C ABORT WAS PERFORMED			X		
WARNING	WARNING: AREA IS EMPTY			X		*
	WARNING: NO DBS FILE			X		*
OTHER	DVARSA-- END OF PROCESSING			X		

*ACTION HAS TO BE TAKEN ONLY WHEN THE MESSAGE IS NOT EXPECTED

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b. Warning - Preceded by "WARNING:", these messages caution the terminal operator that unless the program was run in this situation intentionally, some actions should be taken to correct the situation.

c. Fatal Error - Preceded by "FATAL ERROR:", this error will cause the program to abort. The operator is notified of the abort process by an audio alarm and an error message on the KCRT. A hard-copy listing of the error is automatically printed on the line printer. Various operator actions are required. (see Table 21-4)

d. Other - These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION", etc. These messages describe general information, and require no operator action (See Table 21-4).

21.4.4.6 Program Scheduling

DVARSA is normally run during batch processing at night on an as required basis at the direction of the DBMS specialist. Estimated run time varies from 10 minutes of wall clock time for one area to two hours of wall clock time for the summary of a fully developed data base.

21.4.5 DATA BASE VERIFICATION AREA RECORD SUMMARY BY SET (DVARSS)

21.4.5.1 Summary

DVARSS determines the number of owner and member records of each set of all the requested areas. The first processing step opens the selected areas in retrieval mode. Messages are displayed when a requested data base file is empty or nonexistent. The second processing step counts the owner and member records of

each set in any requested area. When all the owner/member records of a set are counted and the search indicates the end of the set, a line displaying the name of the owner record, the member record, and their respective record counts will be printed. This step is repeated for each of the requested areas. When the last requested area is processed, the processing is complete. At this point the output file and all the opened data base areas are closed and the processing ends.

21.4.5.2 Input

The operator enters the specific areas to be searched on the KCRT.

21.4.5.3 Output

a. Processing summary

b. Production log summary

c. User interaction log

d. Operator prompts and messages.

21.4.5.4 Operational Sequence

After logging in, enter:

@RUN DVARSS

the following screen will appear:

```
DATA BASE VERIFICATION  AREA RECORD SUMMARY BY SET
        ENTER (00) - IF SATISFIED WITH THIS SELECTION
        ENTER (16) - IF NO AREA IS TO BE SELECTED
        ENTER (17) - IF ALL AREAS ARE TO BE SELECTED
    OR
        ENTER THE AREA NO. OF THE AREA TO BE CHANGED
```

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AREA NO.	AREA NAME	SELECTED
01	ANCILLARY	NO
02	ARCHIVE-PRODUCT	NO
03	COMMON-PARAMETER	NO
94	DIRECTORY	NO
05	EPHEMERIS-TELEMETRY	NO
06	ERROR-TEXT	NO
07	GHIT	NO
08	GROUND-CTL-POINT	NO
09	HISTORY	NO
10	INVENTORY	NO
11	MAIN-IMAGE	NO
12	PRODUCT-ASSESSMENT	NO
13	PRODUCTION	NO
14	ROUTE	NO
15	USER-SUPPORT	NO

Entering the appropriate numbers will cause the program to search the selected area and produce the output files (see Figure 21-19).

21.4.5.5 Control Mechanism

Following is a list of Traffic-20 error messages which appear when an invalid response is keyed in by the operator:

MESSAGE	ACTIONS
Enter numbers only	Enter only numeric values (no alphabetic or special characters are allowed)
Field must be filled	Fill up the field (Do not try to bypass any character of the field)
Lower limit is 99 (any two digits)	Enter a value not less than lower limit
Upper limit is 99 (any two digits)	Enter a value not higher than upper limit

LISTING : DV0640
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 14-DEC-81
TIME : 11:44

LANDSAT-D DATA BASE AREA/SET SUMMARY

AREA: INVENTORY

OWNER RECORD	TOTAL OWNER RECORDS	MEMBER RECORD	TOTAL MEMBER RECORDS
IPD-PART-DESCRIPTION	216	IPO-PURCHASE-ORDER-LINE-ITEM	218
IPD-PART-DESCRIPTION	216	IRH-RECEIVE-HISTORY	223
IPD-PART-DESCRIPTION	216	ISP-SPARE-PART	4
IPD-PART-DESCRIPTION	216	IWH-WITHDRAWAL-HISTORY	8
IUS-INVENTORY-USER	8	IWH-WITHDRAWAL-HISTORY	8

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Figure 21-19. Data Base Area/Set Summary

A value must be entered	Enter a value (Don't try to bypass by hitting enter key, tab, etc.)
Can't back up further	Key in a value (the cursor is at the beginning of the field).

The following types of operator display and processing summary messages are displayed:

a. Informational - messages of this type are preceded by the phrase "INFORMATION:", and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action. (Table 21-5)

b. Warning - Preceded by "WARNING:", these messages caution the terminal operator that unless the program was run in this situation intentionally, some actions should be taken to correct the situation.

c. Fatal error - Preceded by "FATAL ERROR:", this error will cause the program to abort. The operator is notified of the abort process by an audio alarm and an error message on the KCRT. A hard copy listing of the error is automatically printed on the line printer. Various operator actions are required. (Table 21-5)

d. Other - These messages are not prefixed with any categroy definition such as "ERROR:", "INFORMATION", etc. These messages describe general information, and require no operator action (See Table 21-5).

21.4.5.6 Program Scheduling

DVARSS is normally run during batch processing at night on as as required basis

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Table 21-5. Message/Action Matrix

CATEGORY	MESSAGE	DO NOT RE-RUN DVARSS	RESPOND PROPERLY	NONE	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL	FATAL ERROR: UNABLE TO	X			X	
	FATAL ERROR: DBMS, ...	X				X
	FATAL ERROR: ERROR IN	X			X	
ERROR	ERROR: ____________ NOT A RECORD OF ____________ AREA	X			X	
INFORMATION	INFORMATION: CONTROL/C ABORT WAS PERFORMED			X		
WARNING	WARNING: AREA IS EMPTY...............			X		*
	WARNING: NO DBS FILE			X		*
OTHER	DVARSA-- END OF PROCESSING			X		

* ACTION HAS TO BE TAKEN ONLY WHEN THE MESSAGE IS NOT EXPECTED.

at the direction of the DBMS specialist. Estimated run time varies from 10 minutes of wall clock time for one area to two hours of wall clock time for the summary of a fully developed data base.

21.4.6 DATA BASE CHAIN CHASER (DVCHCH)

21.4.6.1 Summary

DVCHCH compares record identifiers with data base pointers to ensure that the pointers resolve to correct owners. DVCHCH verifies that applications programs are performing data base updates correctly in the archive product and production data base areas. The data base chain chaser program is a DAS activity that compares record identifiers with the data base pointers to ensure that the pointers resolve to the correct owners. This ensures that the application programs are performing data base updates correctly in the highly volatile archive-product and production data base areas.

21.4.6.2 Input

The operator selects the archive-product area, the production area, or both on a KCRT.

21.4.6.3 Output

Summary of link errors found in the data base (Figures 21-20 and 21-20a).

21.4.6.4 Operational Sequence

After logging in, enter:

@RUN DVCHCH

LISTING : D71070
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 1
DATE : 15-DEC-81
TIME : 08156

CHAIN CHASER ARCHIVE-PRODUCT AREA VERIFICATION

ERROR TYPE	MEMBER TYPE	MEMBER ID	OWNER TYPE	OWNER ID
ERROR: CONSISTENCY	AAI-ARCH-PROD-ID	XXXXXXXXXXX	AAP-ARCH-PROD-ID	L4HHR8128303
ERROR: CONSISTENCY	AAS-ARCH-PROD-ID	L4HHR8128303	AAI-ARCH-PROD-ID	XXXXXXXXXXX
	AAS-INTVL-SEQ-NUM	020	AAI-INTVL-SEQ-NUM	020
ERROR: CONSISTENCY	APK-WORK-STATION-ID	XXX	AWS-WORK-STATION-ID	DRT
	APK-ARCH-PROD-ID	L4HHA8100202		
	APK-STATUS-KEY	RUN		
ERROR: CONSISTENCY	APK-ARCH-PROD-ID	XXXXXXXXXXX	AAP-ARCH-PROD-ID	L4HHR8122303
	APK-WORK-STATION-ID	DRT		
	APK-STATUS-KEY	CUM		
ERROR: CONSISTENCY	APK-STATUS-KEY	XXX	AFS-STATUS	DRP
	APK-WORK-STATION-ID	DRT		
	APK-ARCH-PROD-ID	L4HHR8128303		
ERROR: CONSISTENCY	APK-ARCH-PROD-ID	L4HCA8120025	AAP-ARCH-PROD-ID	L4HHA8100101
	APK-WORK-STATION-ID	DRT		
	APK-STATUS-KEY	RUN		
ERROR: OWNER LINK	APK-WORK-STATION-ID	MIP	AWS-WORK-STATION-ID	
	APK-ARCH-PROD-ID	L4HCA8120025		
	APK-STATUS-KEY	SCO		

TOTAL NUMBER OF BAD MEMBER LINKS : 0
TOTAL NUMBER OF BAD OWNER LINKS : 1
TOTAL NUMBER OF INCONSISTENT LINKS : 6

TOTAL NUMBER OF LINK ERRORS : 7

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Figure 21-20. Chain Chaser Verification Summary

LMS11.C : DV1070
SUBSYSTEM : DAS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODDARD SPACE FLIGHT CENTER
LANDSAT MISSION MANAGEMENT FACILITY

PAGE : 2
DATE : 11-SEP-81
TIME : 10:19

CHAIN CHASER PRODUCTION AREA VERIFICATION

ERROR TYPE	MEMBER TYPE	MEMBER ID	OWNER TYPE	OWNER ID
ERROR: OWNER LINK	PPD-INTERNAL-SCENE-ID	834578999123	PPD-INTERNAL-SCENE-ID	
	PRO-ORDER-ID	123311411		
ERROR: CONSISTENCY	PRO-ORDER-ID	123311411	PUI-ORDER-PROD-ID	444444444
	PPD-INTERNAL-SCENE-ID	834578999123		
ERROR: CONSISTENCY	PAD-ORBIT-ID	112314	PSO-MISSION-ORBIT-ID	121211
	PAD-INTERNAL-SCENE-ID	478812		
	PAD-PRODUCTION-STATUS	ART		
ERROR: CONSISTENCY	PAD-INTERNAL-SCENE-ID	478812	PSP-PATH-ROW	121212
	PAD-ORBIT-ID	112314		
	PAD-PRODUCTION-STATUS	ART		
ERROR: CONSISTENCY	PAD-PRODUCTION-STATUS	ART	PVS-STATUS	111
	PAD-ORBIT-ID	112314		
	PAD-INTERNAL-SCENE-ID	478812		
ERROR: CONSISTENCY	PPD-ORBIT-ID	34511	PSO-MISSION-ORBIT-ID	121211
	PPD-INTERNAL-SCENE-ID	777123		
	PPD-PRODUCTION-STATUS	ARC		
ERROR: CONSISTENCY	PPD-INTERNAL-SCENE-ID	777123	PSP-PATH-ROW	121212
	PPD-ORBIT-ID	34511		
	PPD-PRODUCTION-STATUS	ARC		
ERROR: CONSISTENCY	PPD-PRODUCTION-STATUS	ARC	PVS-STATUS	111
	PPD-ORBIT-ID	34511		
	PPD-INTERNAL-SCENE-ID	777123		

TOTAL NUMBER OF BAD MEMBER LINKS : 0
TOTAL NUMBER OF BAD OWNER LINKS : 1
TOTAL NUMBER OF INCONSISTENT LINKS : 7

TOTAL NUMBER OF LINK ERRORS : 8

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Figure 21-20A. DVCHCH Summary

a. The following screen will appear with operator prompts:

**** DATA BASE LINK CHECK PROGRAM ****

ENTER ONE OF THE FOLLOWING:

1 - FOR ARCHIVE-PRODUCT AREA

2 - FOR PRODUCTION AREA

3 - FOR BOTH AREAS

4 - TO EXIT PROGRAM

b. Operator response:

1. ACCEPTABLE: 1, 2, 3 or 4

   PROGRAM REACTION: PROCEEDS PROCESSING

2. UNACCEPTABLE: OTHER THAN 1, 2, 3 or 4

   PROGRAM REACTION: DISPLAY OF FOLLOWING MESSAGE:

   'INVALID RESPONSE.' THE OPERATOR IS THEN REPROMPTED WITH PART a.

   OPERATOR RESPONSE: THE SAME AS IN PART b.

   WHEN ACCEPTABLE RESPONSE IS GIVEN TO PART b, PROCESSING STARTS

b. Terminal display:

LINK CHECKING IN PROCESS PLEASE WAIT...

The following control file can be written to run the DVCHCH program by batch processing:

```
@RUN DVCHCH
(1 or 2 or 3)
Y
```

@PRINT DVCHCH.SUM

@PRINT CVCHCH.UIL

21.4.6.5 Control Mechanism

The following types of operator displays and processing summary messages may be displayed:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action.

b. Warning.

Messages preceded by "WARNING:" indicate conditions of minor error; one not serious enough to warrant either aborting the program, or aborting a processing subset within the program. Operator action is required in some cases (see Table 21-6).

c. Error.

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 21-6).

d. Fatal Errors.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is

Table 21-6. Message/Action Matrix

CATEGORY	MESSAGE	NONE	RESPOND PROPERLY	RE-RUN	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE				X	
	FATAL ERROR: DBMS, UNSUCCESSFUL ____ OPERATION				X	
	FATAL ERROR: ____				X	
WARNING	WARNING: ____ AREA IS EMPTY -- IT CAN'T BE PROCESSED					X
	WARNING: ____ AREA--NO DBS FILE EXISTS, IT CAN'T BE PROCESSED					X
ERROR	ERROR: INVALID RESPONSE ENTERED.		X			
	ERROR: MEMBER LINK					X
	ERROR: INCONSISTENCY					X
	ERROR: OWNER LINK					X
INFORMATION	INFORMATION: DVCHCH ABORTED BY OPERATOR VIA CTRL-C KEYIN			X		
OTHER	DVCHCH - END OF PROCESSING	X				

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notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 21-6).

e. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general information and require no operator action.

21.4.6.6 Program Scheduling

DVCHCH is normally run to isolate faults when the record totals on the DVARSA and DVARSS do not agree. It will normally be batch processed at night at the direction of the DBMS specialist. Estimated run time is 2 hours of wall clock time.

21.4.7 MAIN IMAGE BIT VERIFIER DUMP (DUMBVD) MAIN IMAGE BIT COMPARATOR (DVMBVC)

21.4.7.1 Summary

The main image bit dump program (DVMBVD) dumps all or a specific date range of the main image area of the data base out to a disk file. At a later time, the main image bit comparator (DUMBVC) compares the dumped file records with the records in the main image area of the data base and reports any changes. The data base update program (DBUPDT) may be run to correct any errors discovered.

21.4.7.2 Input

DVMBVD

a. Selected date range

DUMBVC

a. File name of records to be compared in format: MBV999.SSS

1. MBV - main bit verifier

2. 999 - unique sequence number

3. SSS - sensor ('MSS' or 'TMb')

21.4.7.3 Output

DVMBVD

a. Dump file of selected oata

b. Summary printout of records processed (see Figure 21-21)

DVMBVC

a. Summary print out of inconsistencies between dump file and data base (see Figure 21-22)

```
LISTING   : DV1620     NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :        1
SUBSYSTEM :    DAS              GODDARD SPACE FLIGHT CENTER                   DATE : 06-NOV-81
                             LANDSAT MISSION MANAGEMENT FACILITY              TIME :    08:41

                                  DVNRVD PROCESSING SUMMARY
                               VERIFICATION FILE IS NBV30CMS8

                            DATE RANGE : 10-OCT-79 THRU 10-OCT-81

          NDA DATE KEY  DISPLAY DATE FORMAT                        TOTAL NIA RECORDS
          ------------  -------------------                        -----------------
             80111          20-APR-80                                      1


                           TOTAL NUMBER OF NDA RECORDS: 00001

                           TOTAL NUMBER OF NIA RECORDS: 00001
```

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Figure 21-21. DVMBVD.SUM

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```
LISTING   : DV1630                NATIONAL AERONAUTICS AND SPACE ADMINISTRATION               PAGE :         2
SUBSYSTEM :    DAS                       GODDARD SPACE FLIGHT CENTER                           DATE : 04-NOV-81
                                     LANDSAT MISSION MANAGEMENT FACILITY                       TIME :     08:39

                                          DVMBVC PROCESSING SUMMARY
MDA DATE KEY: 81230

    INCONSISTENCY ERROR(S) FOR MIA SCENE ID: 4N9999999999

      MIA-MAIN-IMAGE FIELD TYPE        VERIFICATION FIELD VALUE              DATA BASE FIELD VALUE
      -------------------------        ------------------------              ---------------------
      MIA-BAND-DATA                    9999999999999999999999999             9999999999999999999999999
      MIA-ORBIT                                                              99999
      MIA-SUN-ELEV                                                           99
      MIA-SUN-AZIM                                                           999
      MIA-PICTURE-LAT-LT                                                     99999
      MIA-PICTURE-LONG                                                       999999
      MIA-CONDITION-FLAG                                                     0
      MIA-GEOMETRIC-CORR-TYPE                                                0
      MIA-GEOMETRIC-ACCURACY-AL-TRK                                          000
      MIA-GEOMETRIC-ACCURACY-AC-TRK                                          000

    TOTAL NUMBER OF MIA RECORDS MISSING:     0
    TOTAL NUMBER OF MIA INCONSISTENCIES:    10

************************************************************************

MDA DATE KEY: 81232

    INCONSISTENCY ERROR(S) FOR MIA SCENE ID: 194  4444444

      MIA-MAIN-IMAGE FIELD TYPE        VERIFICATION FIELD VALUE              DATA BASE FIELD VALUE
      -------------------------        ------------------------              ---------------------

      MIA-ENTRY-DATE                   81111                                 81333
      MIA-ORBIT                        44444                                 88888

    INCONSISTENCY ERROR(S) FOR MIA SCENE ID: 5555555555

      MIA-MAIN-IMAGE FIELD TYPE        VERIFICATION FIELD VALUE              DATA BASE FIELD VALUE
      -------------------------        ------------------------              ---------------------

      MIA-ACQUISITION-DATE                                                   81232
      MIA-ARCH-REGEN-FLAG              5                                     6
      MIA-GEOMETRIC-ACCURACY-AC-TRK                                          000

    TOTAL NUMBER OF MIA RECORDS MISSING:     0
    TOTAL NUMBER OF MIA INCONSISTENCIES:     5

************************************************************************
************************************************************************
```

Figure 21-22. DVMBVC.SUM

```
LISTING   : DVI830,          NATIONAL AERONAUTICS AND SPACE ADMINISTRATION          PAGE :          3
SUBSYSTEM :    DAS'                    GODDARD SPACE FLIGHT CENTER                  DATE : 04-NOV-81
                                  LANDSAT MISSION MANAGEMENT FACILITY               TIME :     08:39

                                       DVHBVC PROCESSING SUMMARY

  TOTAL NUMBER OF NDA RECORDS MISSING: 00000

  TOTAL NUMBER OF NIA RECORDS MISSING: 00001

  TOTAL NUMBER OF NIA INCONSISTENCIES: 00022
```

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Figure 21-22. (Continued)

21.4.7.4 Operational Sequence

DVMBVD

After logging in, enter:

@RUN DVMBVD

The screen shown in Figure 21-23 will appear with operator prompts.

When a valid selection has been made, the program searches the main image area of the data base finding all MDA-DATE-ACQUISITION records within the date range. The member MIA-MAIN-IMAGE records for each MDA record are also found. All records are then written to a dump file. A summary report of the total number of records of each type is produced together with the name of the dump file (see Figure 21-21).

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```
DVMBVD          (DVMBVD)-------------MAIN IMAGE BIT VERIFIER DUMP PROGRAM-------------(DVMBVD)
DVMBVD
DVMBVD
DVMBVD                                  SELECT ONE OF THE FOLLOWING:  2
DVMBVD
DVMBVD                                     1  -  FOR ALL MDA DATES
DVMBVD
DVMBVD                                     2  -  FOR MDA DATE RANGE
DVMBVD
DVMBVD                                     3  -  EXIT
DVMBVD
DVMBVD
DVMBVD
DVMBVD                                  ENTER DATE RANGE:
DVMBVD
DVMBVD
DVMBVD                                  ENTER START DATE (DD-MMM-YY):  10OCT79
DVMBVD
DVMBVD                                  ENTER STOP DATE (DD-MMM-YY) :  10OCT80
DVMBVD
DVMBVD
DVMBVD
DVMBVD
DVMBVD
DVMBVD     DVMBVD-END OF PROCESSING
```

Figure 21-23. DVMBVD Prompts

DVMBVC

After logging in, enter:

@RUN DVMBVC

The screen shown in Figure 21-24 will appear with operator prompts.

When a valid file name has been entered, the program reads records from the dump file created by the DVMBVD process. A main-image record from the file is compared to the actual main-image data base record if it still exists in the data base. Missing record errors and inconsistency errors are written to a summary report (Figure 21-22).

The following control files can be written to run the DVMBVD and DVMBVC programs by batch processing:

```
@RUN DVMBVD
@PRINT DVMBVD.SUM
@PRINT DVMBVD.UIL
@PRINT DVMBVD.PLG

@RUN DMVBVC
@PRINT DVMBVC.SUM
@PRINT DVMBVC.UIL
@PRINT DVMBVC.PLG
```

To run in batch, all necessary user responses would need to be supplied in the control stream.

```
DVMBVC      (DVMBVC)------------- MAIN IMAGE BIT COMPARITOR PROGRAM-------------(DVMBVC)
DVMBVC
DVMBVC
DVMBVC
DVMBVC      ENTER VERIFICATION FILE NAME IN FORMAT MBV999MMM, OR EXIT TO STOP
DVMBVC      MBV999MSS
DVMBVC
DVMBVC      INFORMATION: PROCESSING IN PROGRESS, PLEASE WAIT...
DVMBVC      DVMBVC-END OF PROCESSING
```

Figure 21-24. DVMBVC Prompts

21.4.7.5 Control Mechanism

The following types of operator displays and processing messages may be displayed:

a. Informational.

Messages of this type are preceded by the phrase "INFORMATION:" and describe general processing information such as file names, tape-IDs, and processing activities. They require no operator action. (see Table 21-7)

b. Error.

This type of error message is preceded by "ERROR:" and can describe either invalid operator input, or a processing error serious enough to abort a processing subset within the program. Some form of operator action is required (see Table 21-7).

c. Fatal Errorr.

Messages preceded by "FATAL ERROR:" indicate conditions that will cause the program to abort. The data base is restored to the point just prior to the aborted program's execution. The operator is notified of the aborted processing by an audio alarm on the KCRT and an error message on the terminal. A hardcopy listing of the error is automatically printed on the line printer. Various operator actions are required (see Table 21-7).

d. Other.

These messages are not prefixed with any category definition such as "ERROR:", "INFORMATION:", etc. They describe general information and require no operator action.

Table 21-7. Message/Action Matrix

CATEGORY	MESSAGE	NONE	RESPOND PROPERLY	RERUN	CONTACT DATA ADMINISTRATOR		
FATAL ERROR	FATAL ERROR: NO FLAG COMMON-PARAMETER RECORD				X		
	FATAL ERROR: INVALID SENSOR TYPE IN CCP FLAG RECORD				X		
	FATAL ERROR: THERE ARE NO MDA RECORDS TO BE PROCESSED				X		
	FATAL ERROR: VERIFICATION FILE IN WRONG FORMAT				X		
	FATAL ERROR: DURING PROCESSING AN MIA SET WAS LOST				X		
	FATAL ERROR: NO CCP FLAG RECORD IN DATA BASE				X		
ERROR:	ERROR: START DATE CANNOT BE GREATER THAN STOP DATE		X				
	ERROR: DATE ENTERED CANNOT BE GREATER THAN TODAYS DATE		X				
	ERROR: INVALID SELECTION, ENTER 1,2, OR 3		X				
	ERROR: THERE WERE NO MIA RECORDS FOR THIS DATE	X					
	ERROR: NO MDA RECORD FOR THIS DATE	X					
	ERROR: FILE TYPE IS INVALID		X				
	ERROR: FILE EXTENSION IS INVALID		X				
	ERROR: MIA RECORD IS MISSING	X					
	ERROR: MDA DATE RECORD IS MISSING	X					
INFORMATION	INFORMATION: NO FILES GENERATED FOR THIS RUN	X					
	INFORMATION: PROCESSING IN PROGRESS, PLEASE WAIT...	X					
	INFORMATION: NO MAIN IMAGE ERRORS FOUND	X					

ACTION

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21.4.7.6 Program Scheduling

DVMBVD and DVMBVC are run at the direction of the DBMS specialist. Normally, the dump will be run, transferred to a tape and stored for a month, then reloaded for the comparator run. Run times vary from insignificant to several hours, depending on the size of the main-image area. The programs are usually run at night by batch process.

21.4.8 EXPIRED DATA PURGE

TBD

SECTION 22

PRODUCT TRACKING

22.1 ENVIRONMENT/RESOURCES

The Ground Segment product tracking function is implemented via the following hardware and software components.

22.1.1 HARDWARE

a. MMF-M, DEC2050 computer system - one (1) each

b. DEC VT78 remote KCRT terminals - five (5) each

c. Recognition optical character reader (OCR) wands - one (1) each per VT78 terminal

d. GE Terminet-300 printers - one (1) each per VT78 terminal.

22.1.2 SOFTWARE MODULES

a. GTLGIN - Product log-in

b. GTLGOT - Product log-out

c. GHXTRE - ID entry for HDT-GM

d. GTMVRQ - Move request generator

e. GTLTTS - Long-term tape storage move request generator

f. GTALOC - Archive storage location entry

g. GTRETR - Archive/product retrieval request generator

h. GTAINV - Archive inventory

i. DUARSL - Archive storage location list generator

j. GTNPRT - Ground Segment ID label generator

k. GTFPRT - Free format label generator.

Other hardware and software components needed to support product tracking can be identified as elements that are required for normal operational functioning of the Ground Segment, and are assumed to be in place.

22.2 OVERVIEW/BACKGROUND

The product tracking function is a data base oriented system for identifying, following and locating tape and film media as they are moved between various locations during Ground Segment (GS) operations. The supporting application software is designed for automated tracking, to the greatest extent practicable, of tape and film products that are created within the GS, and externally generated tapes that are received in the GS for further processing.

Figure 22-1 is an overview showing the normally anticipated movement of trackable items through the GS processes. Automated tracking of an item begins when it is assigned a system compatible GS identification number and label. For items generated within the GS (reference A through D), this occurs immediately after their creation. Items that enter the GS from external sources without a GS label (reference E, HDT-PS and HDT-GM) are tracked manually until they undergo a GS process, at which time they are assigned a GS identification number and label. Items that enter the GS from external sources (reference E, HDT-GM and HDT-PS) are entered into the tracking system on receipt, via a special entry program.

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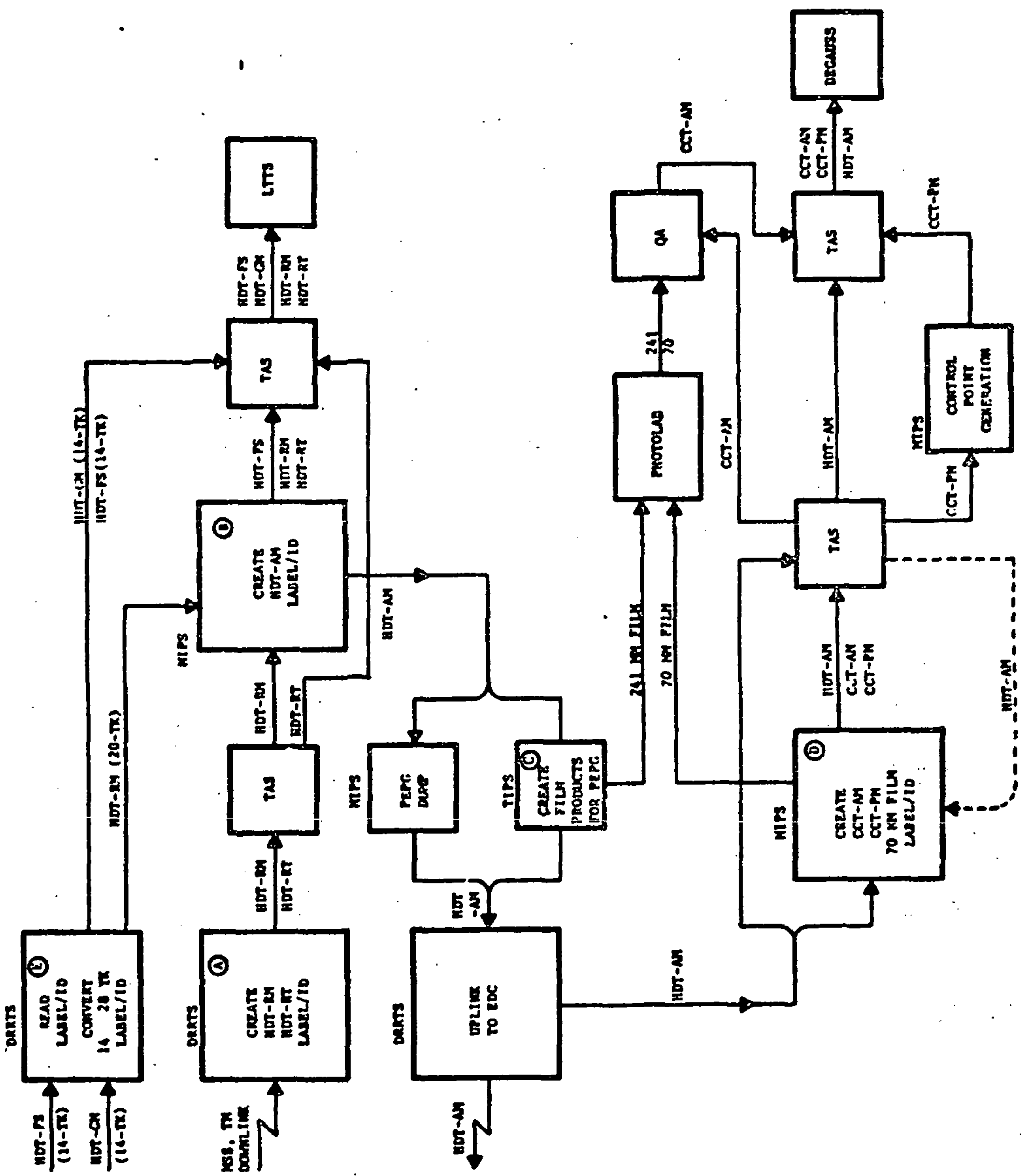

Figure 22-1. Ground Segment Flow of Trackable Items

In several instances, items that have completed a process are moved to temporary archival storage (TAS) until they are required for processing at a new location. Items that have completed their processing cycle remain in TAS for a specified time period and are then moved to the long-term tape storage facility (LTTS). The TAS and LTTS facilities are provided with special software for generating product inventory and location listings to organize and expedite the storage and location of archived products.

The mechanism for tracking products within the GS and archival facilities is a package of operator-activated software modules that interact with the MMF-M DEC2050 data base to store and update the identification and location of all trackable items. The tracking software is executed by the operator from VT78 remote KCRT terminals with Terminet-300 printers designated for this function, and is implemented via interactive routines employed at various stages of the product's progress in accordance with standard operating procedures (SOP).

22.3 FUNCTIONAL DESCRIPTION

22.3.1 INITIAL DATA BASE ENTRY

A trackable product is entered into the tracking system by entering its identification and location into the archive/product field of the MMF-M DEC2050 data base. The data base is updated, whenever the product is moved, to reflect the new location of the product. The initial entry of a product into the data base (Figure 22-2) is made in one of two ways:

a. Automatically, at the product directory generation event, if the product is created within the Ground Segment

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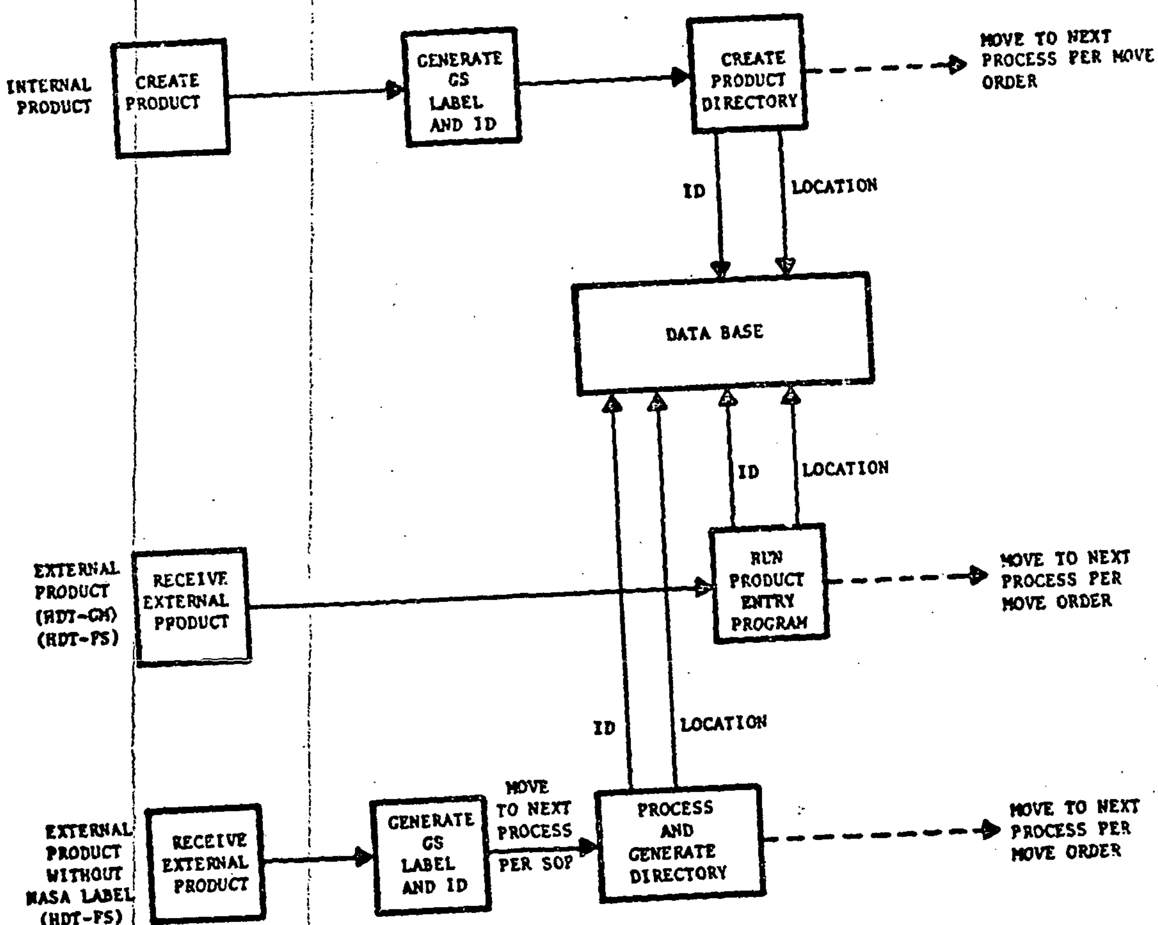

Figure 22-2. Entry of Products Into Tracking System

b. Manually, via standard operating procedure (SOP), if the product originated external to the Ground Segment.

If an externally originated product already bears a label (e.g., HDT-GM and HDT-FS), its initial "log-in" to the data base is made via the GHXTRE entry program.

22.3.2 LOG-IN AND LOG-OUT FUNCTIONS

Subsequent data base updates are made whenever the product is moved from one work/storage location to another. Updating of the data base is effected via a move order process, which entails a log-out/log-in procedure (Figure 22-3) as part of SOP. When a product is to be moved, execution of the log-out process (GTLGOT) informs the data base of the intended destination of the product, and at the same time generates a hard copy move order which is affixed to the product and identifies the departure and destination points of the product move. When the product move is completed, execution of the log-in process (GTLGIN) informs the data base that the product has been received at its destination.

22.3.3 LABEL FUNCTION

Any trackable product must be labelled with an ID number that is compatible with the tracking system. The product tracking system provides a label generation process (Figure 22-4) that prints several labels with the proper GS format and assigns the next sequential ID number for the product category. Whenever a product is created within the Ground Segment, the GS label generator (GTNPRT) is invoked and the labels are attached to the product and its protective

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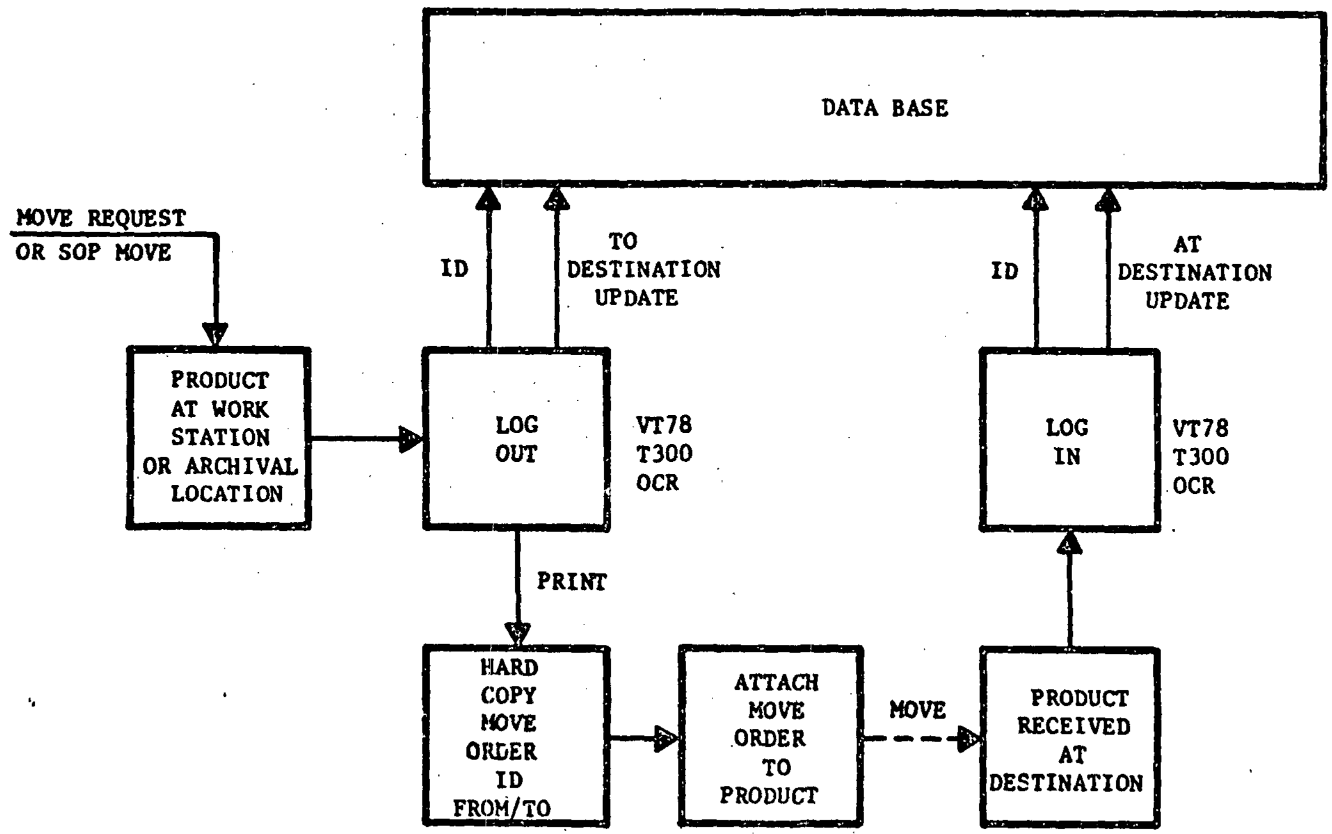

Figure 22-3. Move Order Process

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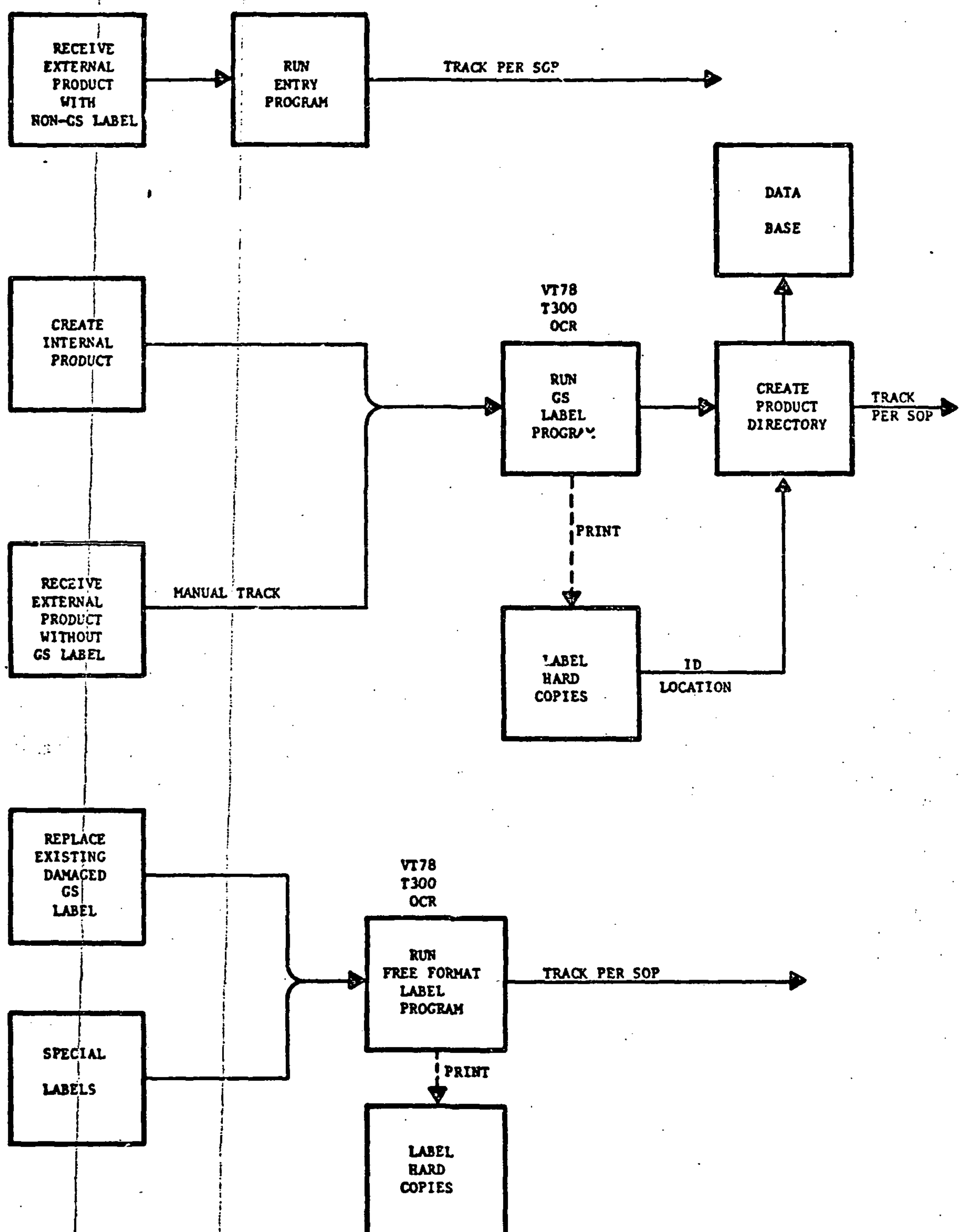


Figure 22-4. Label Process

containers. When the product directory is generated by the creating facility, the label ID number and the product location are entered into the data base, constituting the initial "log-in' of the product to the system.

If a product is received from an external source without a GS formatted label (e.g., HDT-FS and HDT-GM) its current ID (not compatible) is entered into the data base for record purposes via a special entry process provided for those products. It is not tracked by the system until it undergoes a Ground Segment process, at which time a system compatible GS ID label and data base "log-in" entry are generated for the processed product.

For products that require system compatible IDs and GS labels, the ID assignment and label generation are done automatically by the GS labelling software.

For products that require special labels, such as system tapes, save tapes, etc. an alternative free format label generation process (GTFPRT) is available. The free format label process may also be used for duplicating/replacing damaged or worn CS labels, and for miscellaneous applications such as making mailing address labels.

22.3.4 ARCHIVE STORAGE LIST AND INVENTORY LIST

When a product is being received at TAS or LTTS, the log-in process automatically generates an archive storage list indicating at which shelf and slot the product was originally stored, if it had previously been logged in. If that location is now filled, or if a new product is being logged in, the operator will assign a location and execute an archive storage location entry

program (GTALOC) that records the product archive location in the data base. At TAS and LTTS, the operator also has available an inventory listing program (GTAINV) that prints the locations of all archived tapes at that facility.

22.3.5 LTTS MOVE INITIATION

At TAS, the operator can run a program (GTLTTS) that scans all archive tape IDs at TAS and determines if they are eligible to be moved to LTTS, based upon days since creation and days of residence at TAS. All eligible candidates are entered into the data base, and move requests are generated. A printed list of all eligible candidates is printed at TAS.

22.3.6 RETRIEVAL LIST

At any facility, the operator can run on demand a retrieval request list generator program (GTRETR) that scans all data base entries and lists those products that have been requested to be sent to another facility.

22.3.7 OPTICAL CHARACTER READER (OCR)

Whenever a tracking system hard copy printout is generated that contains a product ID number (move requests, move orders, labels, etc.), it also contains a corresponding 13-character coded ID number that can be read with the OCR wand. This capability is provided to expedite keyboard entry of the (normal) 12-character product ID number and to reduce/eliminate key entry errors. The product ID number can be keyed in manually, but sould be done so only in the event of OCR failure.

22.3.8 PRODUCT MOVEMENT INITIATION

Although not an integral part of the operator's interactive product tracking functions, the processes by which product movements are initiated are of interest since they interface directly with product movement actions. Product movements can be initiated in response to either of the following two conditions. In either case, the actual move is accomplished via the log-out/log-in process.

a. An SOP move to a processing location or to storage, per operational procedure instruction

b. A move instructed by receipt of a move request.

The SOP move is self-explanatory, occurring at some point in a standard product processing sequence where the operational procedure instructs a product move to a new process location or to storage.

The other condition, namely receipt of a hard copy move request, first requires generation of the move request, which is produced via the product locating capability of the DEC2050 data base. The move request is a hard copy printout, generated at the DEC2050 system line printer, which requests a product of specified ID number to be moved from its current location to a specified location. A move request is produced by one of the following two circumstances:

a. A product has been created or has undergone a processing step, and is waiting for additional data to become available for its next processing step. The MMF-M operator periodically runs a process request generation program, which checks the DEC2050 data files for

presence of all necessary data. When all the data files are present, they are transmitted together with a process request, via a Decnet link, to the next processing facility, and the data base is searched for the currently recorded location of the specified product. A hard copy move request is printed, showing the product ID, its current location, and its destination facility. The move request is hand-carried or mailed to the facility of current product location, where a move order process is initiated for the specified product.

b. A specified product is requested for a special purpose, such as for evaluation by QA. The requestor invokes the move request listing program (GTMVRQ) at a VT78 terminal, entering the product ID and the required destination facility. The DEC2050 computer responds by searching the data base for the current product location, then prints a hard copy move request as previously described. The move request is hand-carried or mailed to the facility of current product location, where a move order process is initiated for the specified product.

22.4 PROCESS OPERATIONS

In this section, the Ground Segment operational product flow and tracking processes for frequently conducted tracking operations are described. All tracking processes, except for automated data base search and update processes performed by the DEC2050 computer, are executed by production controllers at VT78 remote KCRT terminals using OCR wands to read product ID numbers. Printed outputs are produced on Terminet-300 printers.

22.4.1 PRODUCTS TRACKED

The products that are tracked by the system are:

a. HDT-RM (raw data)

b. HDT-RT (raw data)

c. HDT-AM (radiometric corrected data)

d. HDT-GM (GSTDN)

e. HDT-FS (foreign ground station)

f. CCT-AM (for internal GS use)

g. CCT-AT (for internal GS use)

h. 70 mm film rolls (for internal GS use)

i. 241 mm film rolls (for internal GS use).

The sources, destination and anticipated daily processing volume of these products are presented in Figure 22-5.

22.4.2 SOFTWARE MODULE DESCRIPTIONS

The software modules used in the tracking function are listed below. Detailed descriptions of the modules, including prompts, responses, and operator messages/actions are given in paragraph 22.5.

a. GTLGIN (LSD-MMF-CPD-2062) - Product log-in process

b. GTLGOT (LSD-MMF-CPD-2060) - Product log-out process

c. GHXTRE (LSD-MMF-CPD-2143) - HDT-GM entry process

d. GTMVRQ (LSD-MMF-CPD-2059) - Move request generator

e. GTLTTS (LSD-MMF-CPD-2068) - LTTS move request generator

f. GTALOC (LSD-MMF-CPD-2067) - Archive storage location entry process

g. GTRETR (LSD-MMF-CPD-2061) - Product retrieval request generator

h. GTAINV (LSD-MMF-CPD-2066) - Archive inventory process

i. DUARSL (LSD-MMF-CPD-2083) - Archive storage location list generator

j. GTNPRT (LSD-MMF-CPD-2064) - GS ID label generator

k. GTFPRT (LSD-MMF-CPD-2065) - Free format label generator.

ITEM	SOURCE/ ORIGIN	USED FOR	NO. PER DAY	TIME IN BLDG 28	FINAL DESTINATION
HDT-RM	DRRTS	GENERATE HDT-AM	8	UNTIL SCHED TO LTTS	LTTS
HDT-RT	DRRTS	GENERATE HDT-AT	2	UNTIL SCHED TO LTTS	LTTS
HDT-AM	MIPS	EDC UPLINK	6	UNTIL IN EDC PUBLIC DOMAIN	DEGAUSS
HDT-GM	DIF	GENERATE HDT-RM	2	UNTIL SCHED TO LTTS	LTTS
HDT-FS	DIF	CONVERT TO HDT-RM	6	UNTIL SCHED TO LTTS	LTTS
CCT-AM	MIPS	QUALITY ASSURANCE	2	UNTIL QA FINISHED	DEGAUSS
CCT-PM	MIPS	QUALITY ASSURANCE	2	UNTIL QA FINISHED	DEGAUSS
241 MM FILM ROLL	TIPS	QUALITY ASSURANCE	1	UNTIL QA FINISHED	QA
70 MM FILM ROLL	MIPS	QUALITY ASSURNACE	1	UNTIL QA FINISHED	QA

Figure 22-5. Estimated Product Traffic

22.4.3 PRODUCT TRACKING PROCESSES

Product tracking is carried on primarily via the log-in and log-out processes. Initial product entry (log-in) to the system is effectuated by generation of a product directory or via a special entry program. Archive storage and inventory listings are produced at TAS and LTTS to support archival functions.

The following paragraphs describe the product flow and tracking processes. In the accompanying diagrams, the software program executions are identified by the following symbols:

SYMBOL	FUNCTION	PROGRAM NAME
LI	Log-in	GTLGIN
LO	Log-out	GTLGOT
EG	Enter HDT-GM	GHXTRE
NL	Generate GS label	GTNPRT
LT	LTTS move request (on demand)	GTLTTS
LOC	Enter archive storage location (on demand)	GTALOC
INV	Archive inventory (on demand)	GTAINV
LIS	Archive storage list	DUARSL

To execute any of the tracking programs, the operator signs on to the terminal in conventional manner, using his assigned account number and password. The system will be at command level, displaying the prompt @. The operator enters TAKE XXXXXX.CMD, where XXXXXX is any of the above program names (except DUARSL). The program will now execute.

22.4.3.1 HDT-RM and HDT-RT Flow (Figure 22-6)

a. Downlink data received at DRRTS

b. HDT-RM or HDT-RT created at DRRTS

c. GS labels generated

d. HDT directory created - HDT is "logged-in" to system

e. HDT goes to TAS - HDT-RM waits for additional data for processing to HDT-AM. HDT-RT held for transfer to LTTS

f. HDT-RM to MIPS. Processed to HDT-AM

g. GS labels generated (HDT-AM)

h. HDT-AM directory created - HDT is "logged-in" to system

i. HDT-RM to TAS - held for transfer to LTTS, or for optional rework

j. HDT-RM and HDT-RT transferred to LTTS via Building 28 staging.

22.4.3.2 HDT-AM Flow (Figure 22-7)

a. HDT-AM was created and "logged-in" at MIPS (Figure 22-6)

b. HDT-AM to either:

   1. PEPG dump at MIPS

   2. Transfer to TIPS to process 241 mm film for PEPG

c. Transfer HDT-AM to DRRTS for uplink to EDC

d. Uplink at DRRTS

e. Transfer to either:

   1. TAS for temporary archive

   2. MIPS to generate CCT and/or 70 mm film products, then to TAS

f. Transfer to degauss when in EDC public domain.

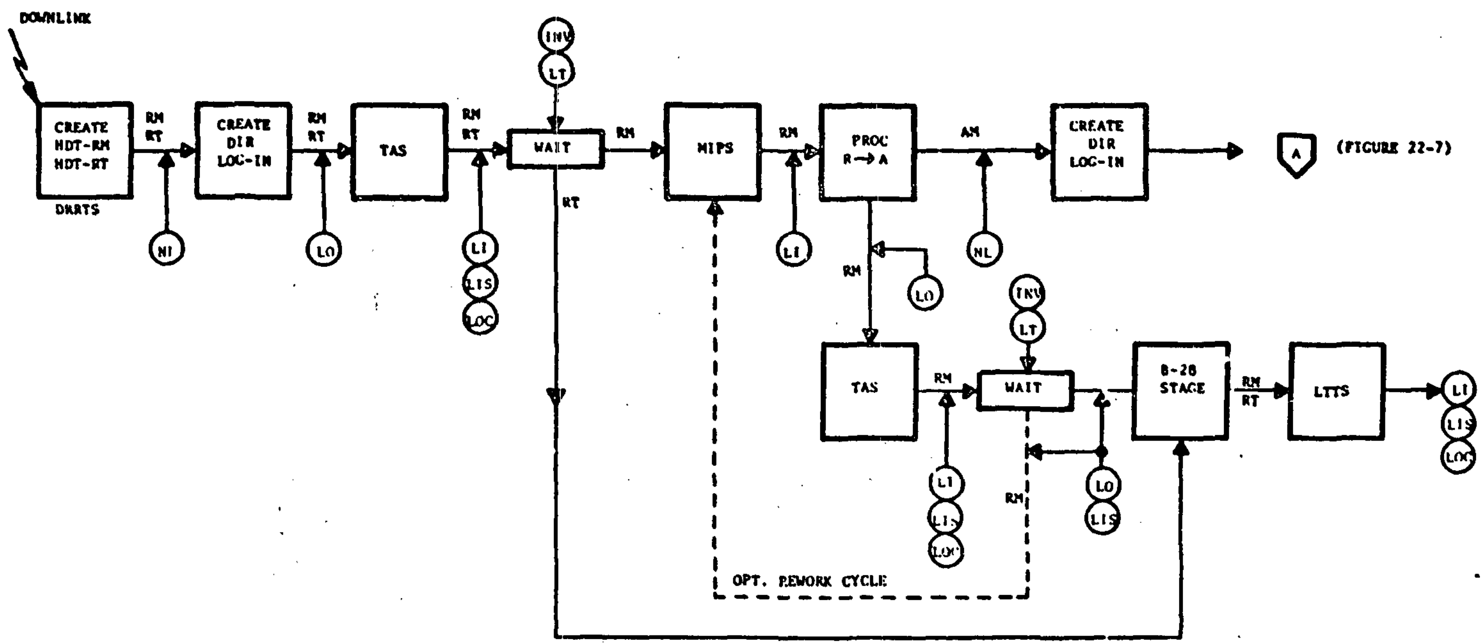
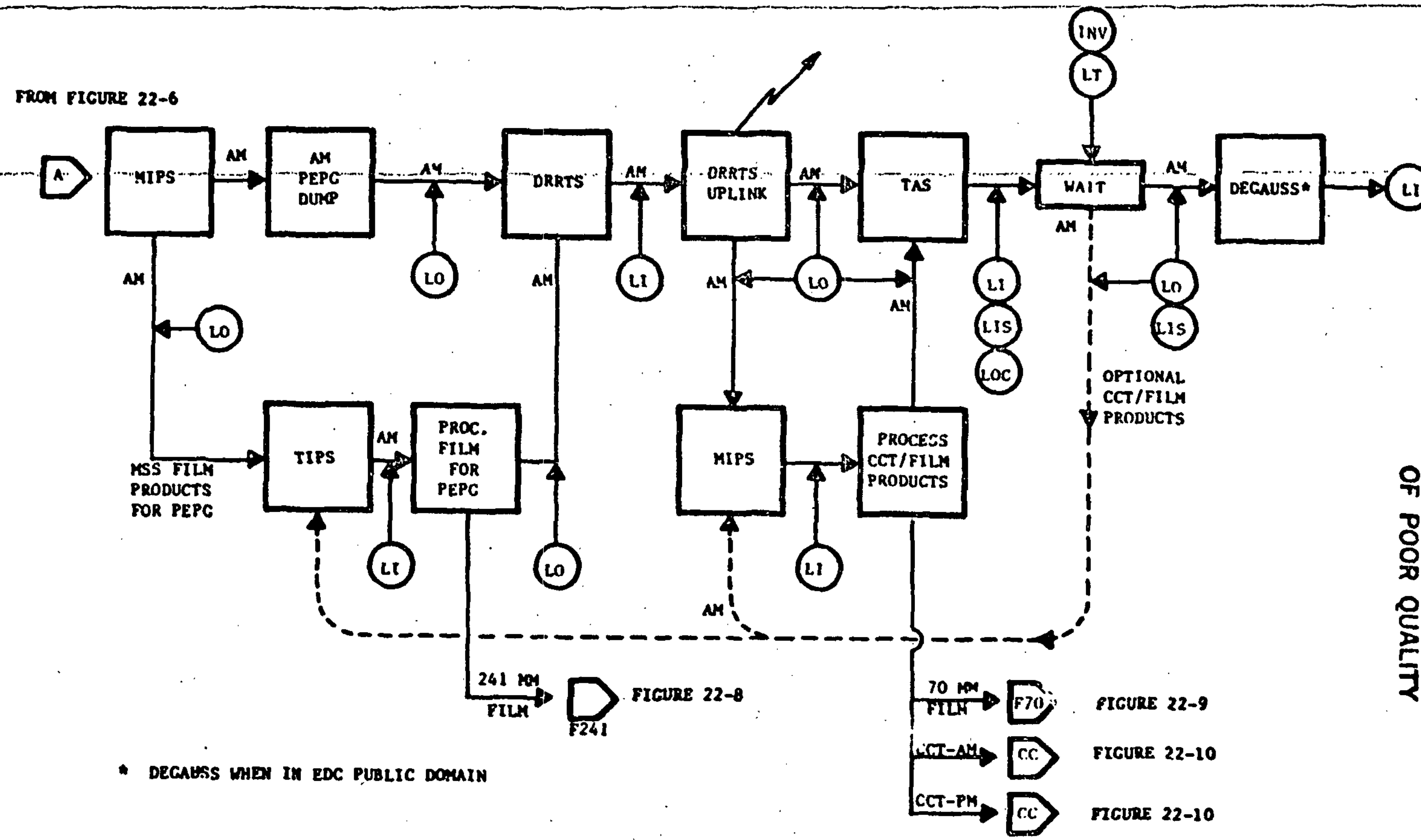


Figure 22-6. HDT-RM and HDT-RT Flow



* DEGAUSS WHEN IN EDC PUBLIC DOMAIN

Figure 22-7. HDT-AM Flow

22.4.3.3 <u>241 mm Film Flow (Figure 22-8)</u>

a. 241 mm film roll was generated at TIPS (Figure 22-7)

b. GS labels generated

c. Film roll directory created - film is "logged-in" to system

d. Film roll transferred to photo lab (Building 23) via Building 28 and Building 23 staging areas

e. Film processed at photo lab

f. Film roll transferred to QA (Building 28) via Building 23 and Building 28 staging areas.

22.4.3.4 <u>70 mm Film Flow (Figure 22-9)</u>

a. 70 mm film roll was generated at MIPS (Figure 22-7)

b. GS labels generated

c. Film roll directory created - film is "logged-in" to system

d. Film roll transferred to photo lab (Building 23) via Building 28 and Building 23 staging areas

e. Film processed at photo lab

f. Film roll transferred to QA (Building 28) via Building 23 and Building 28 staging areas.

22.4.3.5 <u>CCT-AM and CCT-PM Flow (Figure 22-10)</u>

a. CCT-AM or CCT-PM was created at MIPS (Figure 22-7)

b. GS labels generated

c. CCT directory created - CCT is "logged-in" to system

d. CCT transferred to TAS for temporary storage

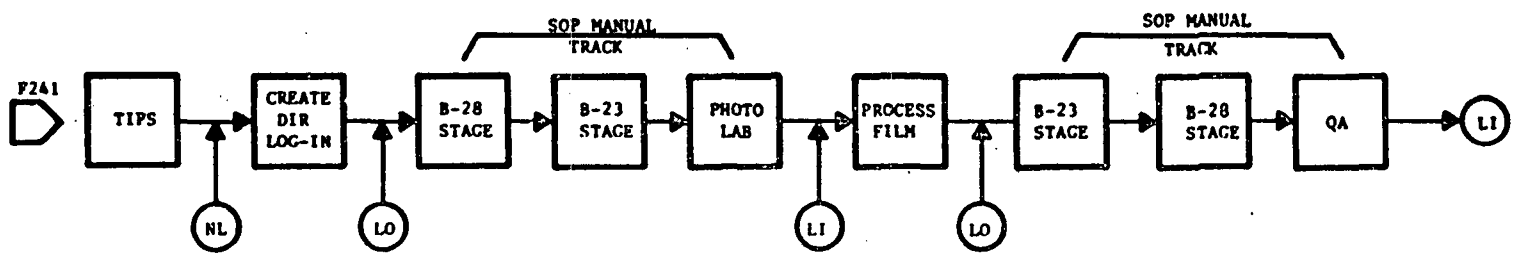


Figure 22-8. 241 mm Film Flow

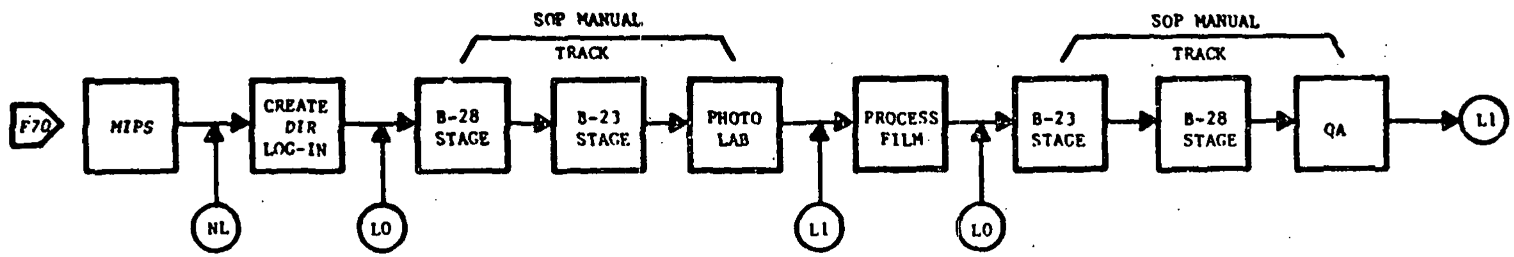


Figure 22-9. 70 mm Film Flow

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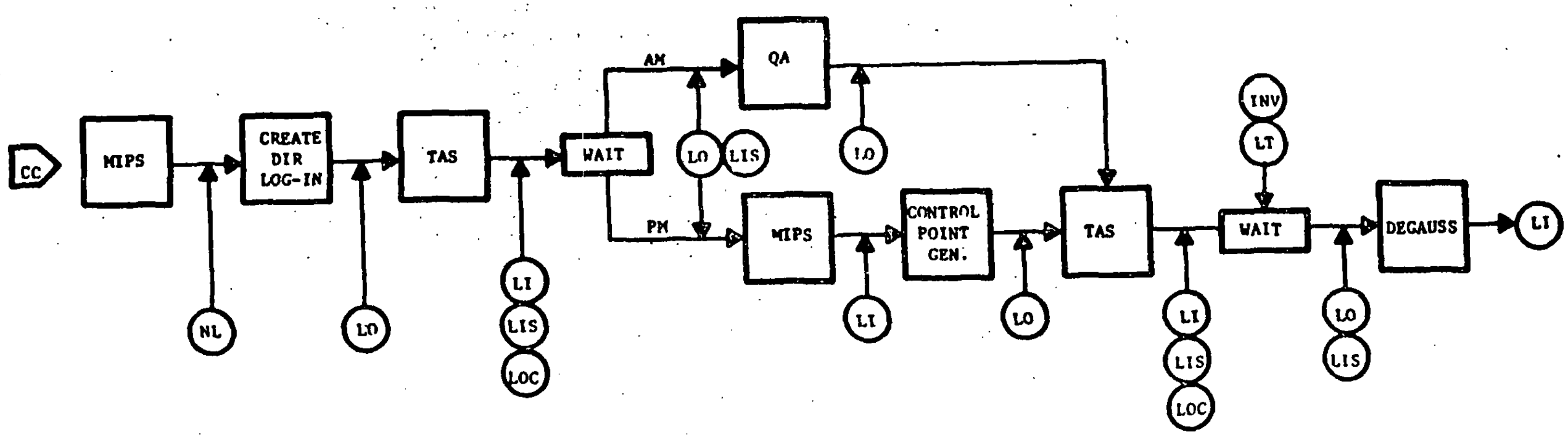

Figure 22-10. CCT-AM and CCT-PM Flow

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e. Transfer CCT to either:

1. QA for evaluation, then to TAS

2. MIPS for control point generation, then to TAS

f. Transfer to degauss.

22.4.3.6 HDT-GM Flow (Figure 22-11)

a. HDT-GM (14-track) originates at Building 23 Domsat Interface Facility (DIF)

b. HDT-GM entered into the system via program GMXTRE

c. HDT-GM transferred to DRRTS via Building 28 staging area

d. 28-track HDT-RM is generated from 14-track HDT-GM

e. HDT-GM transferred to TAS/LTTS

f. GS labels generated for HDT-RM

g. HDT-RM directory created - HDT is "logged-in" to system

h. HDT-RM used to create HDT-AM

i. HDT-RM transferred to TAS/LTTS

j. GS labels generated for HDT-AM

k. HDT-AM directory created - HDT is "logged-in" to system

l. HDT-AM is uplinked to EDC

m. HDT-AM transferred to TAS/Degauss.

22.4.3.7 HDT-FS Flow (Figure 22-12)

a. HDT-FS originates at Building 23 Domsat Interface Facility (DIF)

b. HDT-FS transferred to DRRTS via Building 28 staging area

c. GS labels generated - HDT-FS is converted to 28-track and redesignated as HDT-RM

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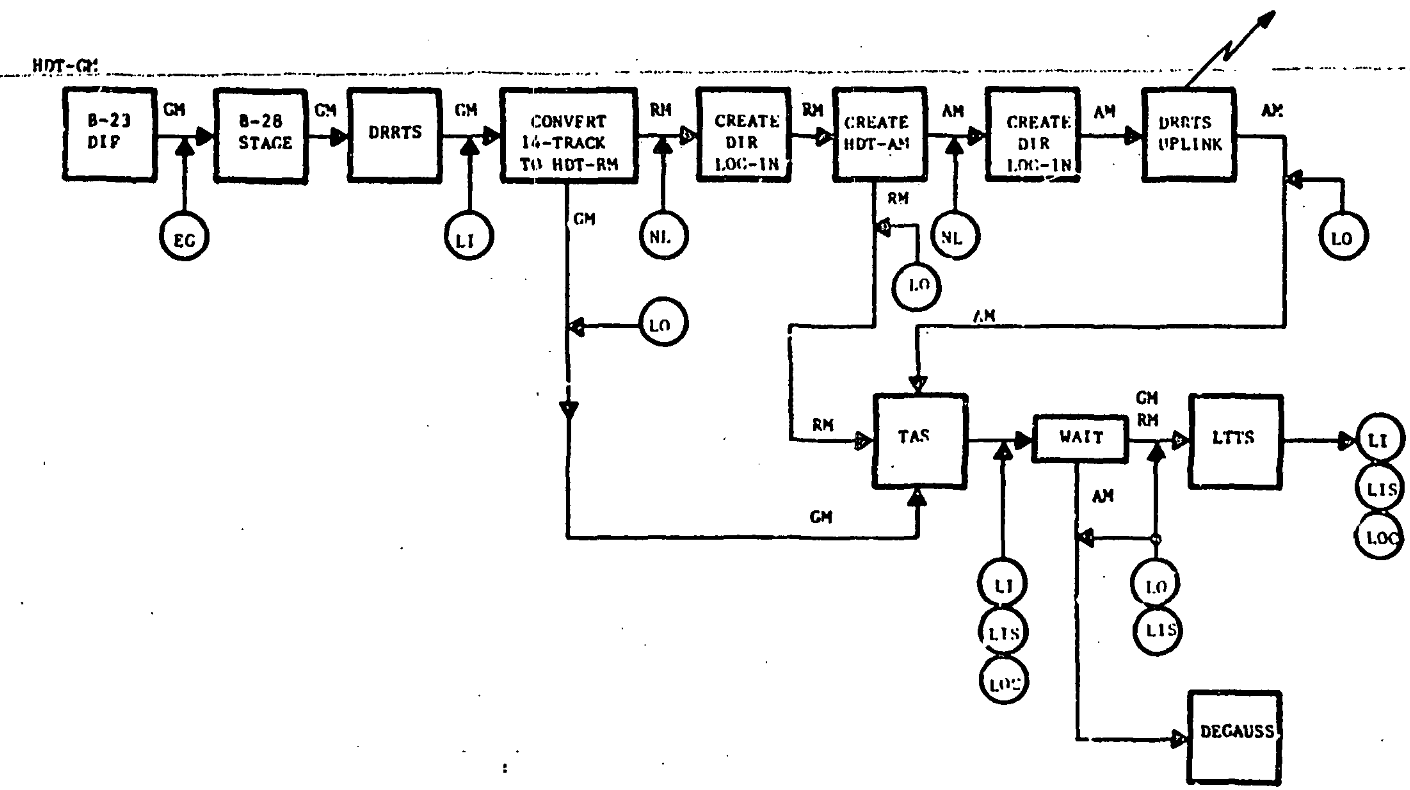

Figure 22-11. HDT-GM Flow

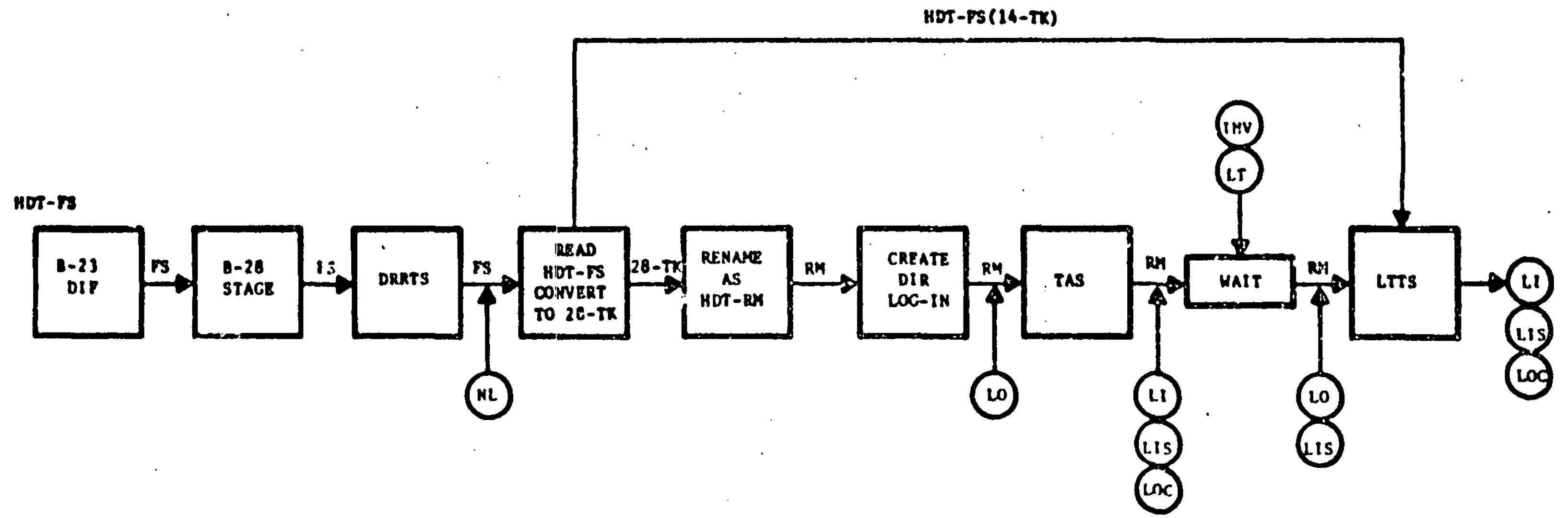

Figure 22-12. HDT-FS Flow

d. HDT is read and directory created - HDT-RM is "logged-in" to system

e. HDT transferred to TAS/LTTS.

22.4.3.8 Ad Hoc Product Flow (Figure 22-13)

a. A specific product is required by a requestor at facility "x"

b. The requestor runs program GTMVRQ at the VT78 terminal, providing product ID and destination (facility "x")

c. A hard copy move request is printed on the MMF-M line printer. The product ID, current location, and destination facility are specified on the move request

d. The move request is transmitted to the current product location (facility "y")

e. The product is moved to the requestor's location (facility "x") via standard log-out/log-in process.

22.5 Tracking Function Software Module Descriptions

22.5.1 GTLGIN (LSD-MMF-CPD-2062) - PRODUCT LOG-IN PROCESS

The product log in program (GTLGIN) is run by an operator at a work facility. The program prompts the operator for the work station and validates the response. (See a list of valid facilities in Table 22-1.) The program then iterates for product IDs that need to be logged into this work station, until the operator requests an exit from the program processing. The operator is asked for the product ID and may enter a GS label (keyboard entry) or OCR label.

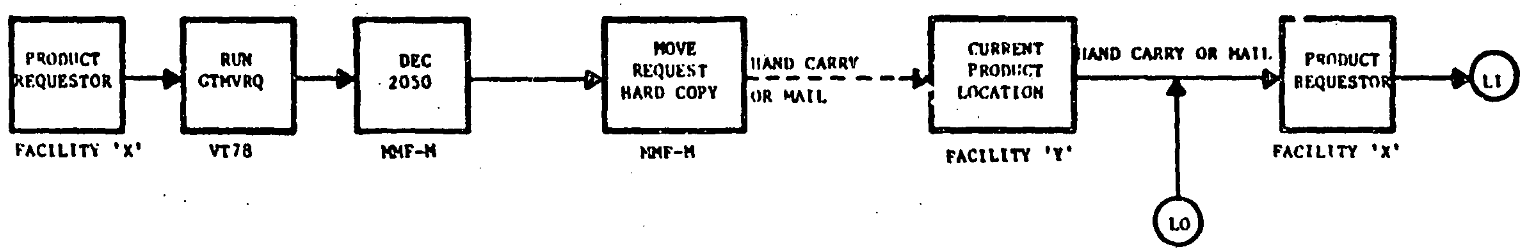

Figure 22-13. Ad Hoc Product Flow

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Table 22-1. Valid Work Facilities

WORK FACILITY CODE	MEANING
B23	BUILDING 23 STAGING AREA
B28	BUILDING 28 STAGING AREA
DGS	DEGAUSS AREA
DRT	DRRTS, DATA RECEIVE RECORD
EDC	EROS DATA CENTER
FSS	FLIGHT SEGMENT SCHEDULING
LAS	LANDSAT ASSESSMENT SYSTEM
LOS	LOST
LTS	LONG TERM TAPE STORAGE
MIP	MSS IMAGE PROCESSING
MMF	MISSION MANAGEMENT FACILITY
PPL	PHOTO PROCESSING LAB
SHP	SHIPPING FACILITY
TAS	TAPE ARCHIVE STORAGE
TIP	TM IMAGE PROCESSING
UNA	UNAVAILABLE

For an OCR label, a wand will serve as the input mechanism and the OCR label is converted to a GS label and validated. If a GS label is entered, it is validated and the operator is asked whether a master or copy is being logged in. The validated label is used to retrieve the product entry from the MMF data base. This is checked to ensure that the product tracking status fields are suitably filled and it is then updated to reflect the product log-in. In the case of master product IDs only, the archive work station is also updated. If the work station is TAS or LTTS, the GS label, OCR label and archive storage location are written to a record in a scratch file which will be used to generate the archive storage list. Finally, the archive storage list is produced via a utility (DUARSL) on the printer of the Terminet 300 terminal.

The GTLGIN prompts and responses are shown in Table 22-2.

A list of operator messages and corresonding actions is given in Table 22-3.

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Table 22-2. GTLGIN Prompts and Responses

PROMPT	RESPONSE	EXPLANATION
YOU ARE RUNNING GTLGIN. DO YOU WISH TO PROCEED WITH THE PROGRAM (Y/N)?	Y	RUN PROGRAM GTLGIN
	N	TERMINATE PROGRAM GTLGIN
PLEASE ENTER THE WORK STATION OR "EXIT"	WORK STATION	THREE CHARACTER WORK STATION IDENTIFYING OPERATOR'S CURRENT WORK FACILITY OR LOCATION (EX., MMF)
	EXIT	TERMINATE THIS PROGRAM.
PLEASE ENTER THE PRODUCT ID (GS LABEL OR OCR LABEL) OR "EXIT"	PRODUCT ID	12-CHARACTER GS LABEL OR 13-CHARACTER OCR LABEL
	EXIT	NO MORE PRODUCTS TO BE LOGGED INTO THIS FACILITY
IS THIS A MASTER PRODUCT (Y/N)?	Y	MASTER
	N	COPY

Table 22-3. Operator Messages and Corresponding Actions

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CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN GTLGIN	PRINT GTLGIN.ERR,SUM	NONE	RESPOND PROPERLY TO FOLLOWING PROMPT	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL ERROR	FATAL ERROR: ______	X	X				X
	FATAL ERROR: UNABLE TO FIND COMMON PARAMETER FLAG RECORD	X	X			X	
	FATAL ERROR: CANNOT FIND ARCHIVE-PRODUCT WORK STATION RECORD FOR: ______	X	X			X	
	FATAL ERROR: CANNOT FIND ARCH-PROD-KEY (APK) FOR PROD-ID.: ______	X	X			X	
	FATAL ERROR: VT78 MACRO CALL RETURNED ERROR	X	X				X
ERROR	ERROR: INVALID WORK STATION				X		
	ERROR: INVALID PRODUCT ID - (REASON)				X		
	ERROR: INCORRECT RESPONSE. RESPONSE MUST BE Y OR N				X		
	ERROR: SENSOR TYPE OF PRODUCT ID DOES NOT MATCH DATA BASE SENSOR TYPE				X		
	ERROR: COPIES CANNOT BE LOGGED INTO THE TAS/LTTS FACILITY				X		
	ERROR: PRODUCT ID IS NOT RECORDED IN DATA BASE				X		
	ERROR: PRODUCT WAS NOT LOGGED OUT TO CURRENT WORK STATION				X		
	ERROR: PRODUCT WAS NOT LOGGED OUT OF ANY WORK STATION				X		
WARNING	WARNING: UNSUCCESSFUL CONVERSION - (REASON)			X			

Table 22-3. Operator Messages and Corresponding Actions (Cont'd)

CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN GTLGIN	PRINT GTLGIN.ERR,SUM	NONE	RESPOND PROPERLY TO FOLLOWING PROMPT	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
INFO	INFO: PRODUCT SUCCESSFULLY LOGGED IN			X			
	INFO: PRODUCT NOT LOGGED IN			X			
	GTLGIN - END OF PROCESSING			X			

22.5.2 GTLGOT (LSD-MMF-CPD-2060) - PRODUCT LOG-OUT PROCESS

GTLGOT logs a product out of a facility. The product log out process is initiated when the operator logs out products from a particular work facility and sends them to other facilities.

Upon initiation, the process requests the operator to enter the work station. After verifying the facility name (reference Table 22-1), the operator is asked for the desired destination. This is also verified and the operator is prompted to enter the product ID of the product to be sent to the specified destination. The operator may enter a product ID in the form of an OCR label or a GS label. For GS labels, the operator is also asked to specify whether it is a master or a copy. GTLGOT verifies the product ID entered, retrieves the corresponding product record from the MMF data base, verifies its product tracking status fields and finally updates the record. The GS label (product ID) is then stored in a scratch file to be later printed into a move order list. If the permanent archive facility field and the current facility both contain LTS or TAS, the product's archive storage location, OCR label and GS label are stored in a scratch file to be printed into an archive storage list.

Finally, the program prints the move order list on the Terminet 300. If the log-out facility is TAS or LTS, an archive storage list is printed via the utility DUARSL, which sorts the scratch file by storage location and then puts out the list on the Terminet 300 printer.

The GTLGOT prompts and responses are shown in Table 22-4. A list of operator messages and corresponding actions is given in Table 22-5.

Table 22-4. GTLGOT Operator Interface Formats

PROMPT	INPUT	ACTION TAKEN
Do you wish to proceed with the GTLGOT program (Y/N)	Y N	Proceed with the GTLGOT program Halt processing the GTLGOT program
You are running GTLGOT. Do you wish to proceed with the program	Y N	Proceed with the GTLGOT program Halt processing the GTLGOT program
Enter current work facility:	XXX	Enter the current facility
Enter destination facility:	XXX	Enter the destination
Enter the product ID (OCR/ GS label) or "exit" (for different destination)	OCR label GS label 'Exit'	Enter OCR label, Enter GS label Enter 'Exit'
Do you wish to continue to log out products to: (Y/N)	Y N	Continue to log out products to the given destination Stop logging out products to the given destination
Is this a master or copy product (M = master/C = copy)	M C	Specify that this is a master product Specify that this is a copy product
Do you wish to override the current destination - already in data base (Y/N)?	Y N	Wish to override the destination in the data base Do not wish to override the destination in the data base.

Table 22-5. Error Messages and Corresponding Handling Actions

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CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN	PRINT - .ERR..SUM	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATABASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL ERROR:	FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND	X	X			X	
	FATAL ERROR: VT78 MACRO CALL RETURNED ERROR	X	X				X
	FATAL ERROR: ________	X	X				X
ERROR	ERROR: INVALID RESPONSE, VALID ENTRIES ARE Y AND N ONLY				X		
	ERROR: INVALID CURRENT FACILITY ENTERED				X		
	ERROR: THE DESTINATION IS THE SAME AS THE CURRENT FACILITY				X		
	ERROR: INVALID DESTINATION ENTERED				X		
	ERROR: A COPY PRODUCT CANNOT BE LOGGED OUT OF TAS OR LTS				X		
	ERROR: THE AAP-CURRENT-FACILITY - NOT EQUAL TO CURRENT FACILITY				X		
	ERROR: THE AAP-COPY-CURRENT-FACILITY - NOT EQUAL TO CURRENT FACILITY						
	ERROR: PRODUCT-ID ABOVE HAD BEEN LOGGED OUT OF THE CURRENT FACILITY				X		
	ERROR: INVALID RESPONSE, VALID RESPONSES ARE "M" FOR MASTER AND "C" FOR COPY				X		
	ERROR: THE DB SENSOR ___ DOES NOT MATCH ___ WITH THE PRODUCT SENSOR.				X		
	ERROR: ________				X		
WARNING	WARNING: ________			X			
INFORMATION	INFO: PRODUCT SUCCESSFULLY LOGGED OUT			X			
	INFO: THE OPERATOR REQUESTED TERMINATION OF THE PROGRAM			X			
	INFO: TOTAL NUMBER OF ITEMS LOGGED OUT OF THE FACILITY:-			X			
	INFO: TOTAL NUMBER OF ITEMS LOGGED OUT IS			X			
	INFO: ________			X			

Table 22-5. Error Messages and Corresponding Handling Actions (Cont'd.)

CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN	PRINT - .ERR,.SUM	NONE	RESPOND ONLY	FORWARD OUTPUT TO DATABASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
OTHER	GTLGOT - END OF PROCESSING						

22.5.3 GHXTRE (LSD-MMF-CPD-2143) - HDT-GM AND HDT-FS ENTRY PROCESS

The GHXTRE tracking entry program tracks the existence (in the MMF data base) of the 14-track HDT-GM and HDT-FS raw data tapes, that were recorded external to the Ground Segment, after they have been received at GSFC.

The 14-track HDT-GM and HDT-FS tapes contain raw video information from Landsat-D that was received and recorded at any one of the three GSTDN locations (Alaska, Goldstone or GSFC) or at foreign ground stations. These tapes were then sent to and held at Building 23/GSFC before being forwarded to DRRTS.

The HDT-GM and HDT-FS tapes are to be sent to DRRTS, where they are transferred onto the 28-track HDT-R tapes. The GHXTRE tracking entry program is used at Building 23 to record the existence and identity of the HDT-GM and HDT-FS tapes, their current location and any other related information (e.g., number of tracks, intervals within, etc.). It also directs the HDT-GM/HDT-FS tapes to be sent to DRRTS, if they are not already there, by creating a move request listing.

The GHXTRE prompts and responses are shown in Table 22-6.

A list of operator messages and corresponding actions is given in Table 22-7.

Table 22-6. GHXTRE Prompts and Responses

PROMPT	RESPONSE	EXPLANATION
Do you wish to proceed with the execution of the GHXTRE program (Y/N)?	Y N	Continue program GHXTRE Terminate program GHXTRE
Please enter the HDT-X to be put in the data base (e.g., L4MHG8100101)	HDT-X ID	12-character HDT with media type HG or HS
Do you wish to process HDT-ID _____ (Y/N)?	Y N	Continue filling in HDT fields HDT not stored in data base
Please enter the spacecraft start time of interval _____ in YYDDDHHMMSSTTT format	Spacecraft Start Time	14-character SC/time
Please enter the spacecraft stop time of interval _____ in YYDDDHHMMSSTTT format.	Spacecraft Stop Time	14-character SC/time
Please enter the datime created of HDT _____ in YYDDDHHMMSS format.	Date/time	11-character date/time
Please enter the number of tracks on HDT _____.	# tracks	2 characters # of tracks
Please enter the current location of HDT _____ (e.g., DRT).	Work Station	3-character field identifying where the HDT is.
Is the number of intervals on HDT _____ known (Y/N)?	Y N	Prompt operator to fill in interval fields. Don't fill interval fields.
Please enter the number of intervals (01 to 99).	# intervals	Get number of intervals.
Please enter the IRIG start time of interval _____ in	IRIG Start	10-character IRIG time

Table 22-6. GUXTRE Prompts and Responses

PROMPT	RESPONSE	EXPLANATION
DDDHHMMSST format.	Time	
Please enter IRIG stop time of interval _____ in DDDHHMMSST format.	IRIG Stop Time	10-character IRIG time

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Table 22-7. Operator Messages and Corresponding Actions

CATEGORY	MESSAGE	DO NOT RERUN GHXTRE	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATABASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL ERROR	FATAL ERROR: ____	X			X	X
	FATAL ERROR: ____ RECORD NOT FOUND	X			X	X
ERROR	ERROR: ____			X		
	ERROR: INVALID ____ INVALID VALUE IS: ____			X		
	ERROR: MISMATCH ON SENSOR TYPE HDT SENSOR IS ____ DATABASE SENSOR IS ____			X		
	ERROR: THE HDT ID ____ IS ALREADY IN THE DATA BASE			X		
INFO	INFO: ____		X			
	INFO: HDT - ID ____ IS SUCCESSFULLY STORED IN THE DATABASE		X			
	INFO: RESPONSE ACKNOWLEDGED. FURTHER PROCESSING OF ____ IS DISCONTINUED		X			
	INFO: RESPONSE ACKNOWLEDGED. AAP - ARCHIVE-PROD MODIFIED FOR NEW NUM OF INTERVALS.		X			

22.5.4 GTMVRQ (LSD-MMF-CPD-2029) - MOVE REQUEST GENERATOR

The move request process (GTMVRQ) is initiated by an operator at a terminal. The operator is prompted for the product ID of the product to be moved, and the destination to which the move must be made. The product ID may also be entered as an OCR label via the wand input device. The operator inputs are validated for correct syntax, and the product entry record in the MMF data base is checked to see that it has not been requested elsewhere. The product record is updated to reflect the move request, and a hard copy move request with the product ID, current facility, and send-to facility is printed out at the MMF-M line printer.

The GTMVRQ prompts and responses are shown in Table 22-8.

A list of operator messages and corresponding actions is given in Table 22-9.

Table 22-8. GTMVRQ Prompts and Responses

PROMPT	INPUT	ACTION TAKEN
YOU ARE RUNNING GTMVRQ. DO YOU WISH TO PROCEED WITH THE PROGRAM (Y/N)?	Y N	RUN GTMVRQ TERMINATE GTMVRQ
PLEASE ENTER THE SEND TO FACILITY OR "EXIT":	SEND-TO FACILITY EXIT	SEND TO FACILITY QUIT PROCESSING
PLEASE ENTER THE PRODUCT ID (GS LABEL OR OCR LABEL) OR "EXIT":	OMNSTTYYDDDXX MNSTTYYDDDXX EXIT	OCR LABEL GS LABEL QUIT PROCESSING

Table 22-9. Operator Messages

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CATEGORY	MESSAGE	ACTION: NONE	DO NOT RERUN GTMVRQ	INPUT DATA AS PROMPTED (MANUAL MODE)	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS
FATAL	FATAL ERROR: UNABLE TO FIND COMMON PARAMETER RECORD:		X		X		
	FATAL ERROR: VT78 MACRO CALL RETURNED ERROR:		X			X	
ERROR:	ERROR: ____ IS AN INCORRECT RESPONSE. RESPONSE SHOULD BE Y OR N.						X
	ERROR: INVALID PRODUCT ID: ____						X
	ERROR: PRODUCT SENSOR TYPE, ____, DOES NOT MATCH DATABASE SENSOR TYPE ____						X
	ERROR: COPIES ARE NOT ALLOWED- ____						X
	ERROR: PRODUCT ID IS NOT RECORDED IN DATABASE: ____						X
	ERROR: ____ IS ALREADY AT WORK FACILITY: ____						X
	ERROR: INVALID SEND TO FACILITY:						X
	ERROR: ____ WAS ALREADY LOGGED OUT TO ____.						X
INFO:	INFO: MOVE REQUEST WAS SUCCESSFULLY GENERATED	X					
	INFO: OPERATOR REQUESTED TERMINATION OF PROGRAM	X					
	INFO: MOVE REQUEST FOR TO WAS SUCCESSFULLY GENERATED.	X					
WARNING:	WARNING: PRODUCT IS ALREADY AT ____.	X					
	WARNING: PRODUCT WAS ALREADY LOGGED OUT TO ____.	X					
OTHER:	TOTAL NUMBER OF ITEMS SUCCESSFULLY PROCESSED:	X					
	GTMVRQ - END OF PROCESSING	X					

22.5.5 GTLTTS (LSD-MMF-CPD-2068) - LTTS MOVE REQUEST GENERATOR

The LTTS move generation process is initiated by the operator at TAS when he wants to schedule acceptable products for archive at LTTS.

Upon initiation, GTLTTS retrieves all records of archive products stored in the TAS work station and determines which of them are candidates for LTTS scheduling based on tape age, last use, and time in TAS. Scheduling of the candidates is done by updating the destination facility field of the product records. Finally, a processing summary report is printed out, listing the total number of tapes considered, the number of tapes scheduled, and the HDT-IDs.

A list of operator messages and corresponding actions is given in Table 22-10.

22.5.6 GTALOC (LSD-MMF-CPD-2067) - ARCHIVE STORAGE LOCATION ENTRY PROCESS

The archive storage location entry program is initiated by an operator in the tape archive storage (TAS) facility or the long-term tape storage (LTTS) facility. It enters the storage locations of archived HDTs into the MMF data base system.

Upon initialization, the operator is asked to enter the archive facility identifier, which is then verified. Valid facility identifiers are TAS and LTS.

The operator is then requested to enter a product ID and its archive storage location. The product ID may be an OCR label or a GS label. GTALOC verifies the product ID, as well as the storage location that was entered.

Table 22-10. ERROR Messages and Corresponding Handling Actions

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CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN GTLTTS	PRINT GTLTTS.ERR, SUM	NONE	RESPOND PROPERLY	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL ERROR	FATAL ERROR: THE FLAG OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND	X	X			X	
	FATAL ERROR: THE GTLTTS OCCURRENCE OF CCP-COMMON-PARAM NOT FOUND	X	X			X	
	FATAL ERROR: THE AAP-ARCHIVE-PROD RECORD NOT FOUND, ID:	X	X			X	
	FATAL ERROR: AWS-WORK-STATION RECORD NOT FOUND IN DATA BASE:	X	X			X	
	FATAL ERROR: THE SET AWS-APK IS EMPTY, AWS-WORK-STATION-ID:	X	X			X	
	FATAL ERROR: THE AAP-ARCHIVE-PROD NOT FOUND, OWNER OF AAP-APK SET	X	X			X	
	FATAL ERROR:	X	X				X
INFORMATION	INFO: REQUEST SUCCESSFULLY GENERATED			X			
	INFO: NUMBER OF TAPES CONSIDERED IN WORK-STATION "TAS":			X			
	INFO: NUMBER OF TAPES REQUESTED TO BE MOVED:						
	INFO:			X			
OTHERS	GTLTTS - END OF PROCESSING			X			

After validating the operator input, the process then checks that the current storage location in the data base product record is blank. If this location is not blank and does not match the storage location that was keyed in, the operator is informed that the product was previously stored at a different location and is asked whether he wants to override his initial input location.

If the operator does not override, the archive product record is then updated with the new storage location. This entire process is repeated until the operator decides to exit from the program.

The GTALOC prompts and responses are shown in Table 22-11.

A list of operator messages and corresponding actions is given in Table 22-12.

Table 22-11. GTALOC Prompts and Responses

PROMPT	RESPONSE	EXPLANATION
DO YOU WANT TO CONTINUE WITH THE PROGRAM (GTALOC) (Y/N)?	Y	THE OPERATOR WISHES TO CONTINUE THE PROCESSING
	N	THE OPERATOR WISHES TO STOP FURTHER PROCESSING
ENTER THE ARCHIVE FACILITY (TAS/LTS) (EXIT)	TAS/LTS	THE ARCHIVE FACILITY TO BE PROCESSED IS EITHER TAS OR LTS
	EXIT	THE OPERATOR DOES NOT WISH TO PROCESS ANY FURTHER
ENTER THE ARCHIVE ID (OCR/GS LABEL) OR (EXIT)	OCR/GS LABEL	THE ENTERED OCR/GS LABEL IS PROCESSED
	EXIT	THE OPERATOR DOES NOT WISH TO PROCESS ANY FURTHER
ENTER THE ARCHIVE STORAGE LOCATION (E.G., 120931) OR (EXIT)	STORAGE LOCATION	THE OPERATOR SUPPLIED STORAGE LOCATION IS PROCESSED
	EXIT	THE OPERATOR WISHES TO STOP FURTHER PROCESSING
DO YOU WANT TO OVERRIDE THIS LOCATION (Y/N)?	Y	THE OPERATOR WISHES TO OVERRIDE THIS STORAGE LOCATION
	N	THE OPERATOR DOES NOT WISH TO OVERRIDE THIS STORAGE LOCATION

Table 22-12. List of Operator [illegible]ages and Related Action Items

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CATEGORY	MESSAGE	ACTION: DO NOT RETURN GTALOC	ACTION: INPUT DATA AS PROMPTED (MANUAL MODE)	ACTION: FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	ACTION: FORWARD OUTPUT TO SOFTWARE MAINTENANCE	ACTION: FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	ACTION: NONE
FATAL	FATAL ERROR: COMMON PARAMETER RECORD FOR FLAG NOT FOUND	X		X			
	FATAL ERROR: COMMON PARAMETER RECORD FOR OPSLMT NOT FOUND	X		X			
ERROR	ERROR: INVALID RESPONSE (___) - SHOULD ENTER EITHER Y OR N					X	
	ERROR: INVALID ARCHIVE FACILITY (___) - VALID VALUES ARE TAS OR LTS OR EXIT					X	
	ERROR: ARCHIVE-ID ___ COPIES CANNOT BE ARCHIVED					X	
	ERROR: MISMATCH SENSOR TYPE - GS LABEL AND DATA BASE RESPECTIVELY ARE: ___/___					X	
	ERROR: INVALID MEDIA TYPE - ONLY HDT-A (HA) TAPES CAN BE ARCHIVED					X	
	ERROR: ARCHIVE STORAGE LOCATION IS NOT NUMERIC ___					X	
	ERROR: ARCHIVE STORAGE LOCATION - ___ EXCEEDS MAXIMUM STORAGE LOCATION - ___					X	
	ERROR: NO ARCHIVE-PRODUCT RECORD IN THE DATA BASE WITH ID: ___					X	
	ERROR: ARCHIVE-PRODUCT ___ ALREADY AT PERMANENT ARCHIVE FACILITY ___					X	

Table 22-12. List of Operator Messages and Related Action Items (Cont'd.)

CATEGORY	MESSAGE	DO NOT RETURN GTALOC	INPUT DATA AS PROMPTED (MANUAL MODE	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	NONE
INFORMATION	INFORMATION: PRODUCT ___ ALREADY AT ARCHIVE STORAGE LOCATION ___						X
	INFORMATION: ARCHIVE-PRODUCT: ___ NOT UPDATED DUE TO OVERRIDE DECISION						X
	INFORMATION: SUCCESSFUL UPDATE FOR ARCHIVE-PRODUCT-ID = ___						X
	INFORMATION: ___ IS AT PRESENT IN STORAGE LOCATION: ___						
OTHER	THE NEW STORAGE LOCATION IS ___						X
	THE ARCHIVE FACILITY = ___						X

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22.5.7 GTRETR (LSD-MMF-CPD-2061) - PRODUCT RETRIEVAL REQUEST GENERATOR

The GTRETR product tracking retrieval/request list program is capable of generating a listing of all product IDs that are to be moved to other destinations from a current work station. This process is run manually, under operator control. The operator provides the current work station from which the list of products to be moved is generated.

When initiated, the process requests the operator's work station and verifies it. If it is a valid work station, GTRETR then proceeds to examine the status of all products at that work station. If the status indicates that the product is to be sent to another facility but has not been logged out yet, GTRETR generates a listing on the Terminet-300 giving the product IDs with their destinations and storage locations.

The GTRETR prompts and responses are shown in Table 22-13.

A list of operator messages and corresonding actions is given in Table 22-14.

Table 22-13. GTRETR Prompts and Responses

PROMPT	RESPONSE	EXPLANATION
YOU ARE RUNNING GTRETR. DO YOU WISH TO CONTINUE PROCESSING (Y/N)?	Y	THE OPERATOR WISHES TO CONTINUE PROCESSING.
	N	THE OPERATOR WISHES TO STOP FURTHER PROCESSING.
DO YOU WISH TO CONTINUE GTRETR PROCESSING (Y/N)?	Y	THE OPERATOR WISHES TO CONTINUE PROCESSING.
	N	THE OPERATOR WISHES TO STOP FURTHER PROCESSING.
ENTER WORK STATION.	OPERATOR WORK STATION (VALID RESPONSES IN TABLE 22-1)	THE PRODUCTS WAITING TO BE LOGGED OUT OF THIS WORK STATION ARE DETERMINED.

Table 22-14. Message/Action Matrix

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CATEGORY	MESSAGE	DO NOT RERUN GTRETR	INPUT DATA AS PROMPTED (MANUAL MODE)	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FORWARD OUTPUT TO SOFTWARE MAINTENANCE	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS
FATAL	FATAL ERROR: ARCH WORK STN RECORD NOT PRESENT IN MMF DATABASE FOR:_____	X		X		
	FATAL ERROR: ARCHIVE PRODUCT KEY NOT IN MMF DATABASE FOR WORK STN:_____	X		X		
	FATAL ERROR: ARCH PROD REC NOT IN MMF DB FOR ARCH PROD KEY:_____	X		X		
	FATAL ERROR: CURRENT FAC:_____NOT = OPER WORK STN:_____FOR_____	X		X		
	FATAL ERROR: PREMATURE EOF ON FIRST READ OF SCRATCH FILE.	X			X	
	FATAL ERROR: VT78 MACRO CALL RETURNED ERROR.	X			X	
	FATAL ERROR: DB ARCH PROD ID_____HAS INVALID SENSOR TYPE	X		X		
ERROR	ERROR: INVALID RESPONSE. RESPONSE MUST BE Y OR N.		X			
	ERROR: INVALID WORK STATION.		X			
INFORMATION	GTRETR - END OF PROCESSING					

22.5.8 GTAINV (LSD-MMF-CPD-2066) - ARCHIVE INVENTORY PROCESS

GTAINV is operated on demand at either TAS or LTTS, and generates an inventory sheet of all archived products at the specified facility, together with their storage locations. The inventory is listed by sequential storage locations, and shows locations that are unoccupied.

GTAINV receives the current facility name (TAS or LTS) from the operator and searches through the data base product records for the requested facility. Products that are assigned to the facility and are used for archiving are listed on a scratch file. The scratch file is sorted by archive storage location in ascending order, and is printed on the Terminet-300, providing an archive inventory list. When the requested facility is TAS, the empty storage slots are also listed in the listing file.

The GTAINV prompts and responses are shown in Table 22-15.

A list of operator messages and corresponding actions is given in Table 22-16.

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Table 22-15. GTAINV Operator Interface Formats

PROMPT	INPUT	ACTION TAKEN
YOU ARE RUNNING GTAINV. ENTER THE CURRENT FACILITY OR EXIT (TAS,LTS OR EXIT)	EXIT	PROCESSING STOPPED
	TAS	ARCHIVE INVENTORY LISTING FOR TAS FACILITY IS PRODUCED
	LTS	ARCHIVE INVENTORY LISTING FOR LTS FACILITY IS PRODUCED

Table 22-16. Message/Action Matrix

CATEGORY	MESSAGE	ACTION: NONE	ACTION: RESPOND PROPERLY	ACTION: RE-RUN	ACTION: FORWARD OUTPUT TO SOFTWARE MAINTENANCE	ACTION: FORWARD OUTPUT TO DATA BASE ADMINISTRATOR
FATAL	FATAL ERROR: DISK, UNABLE TO ____ THE ____ FILE -				X	
	FATAL ERROR: DBMS, UNSUCCESSFUL ____ OPERATION				X	
	FATAL ERROR: ____					
	FATAL ERROR: ____ RECORD NOT FOUND					X
ERROR	ERROR: INVALID RESPONSE - . VALID RESPONSE ARE		X			
INFORMATION	INFORMATION: ____	X				
OTHER	YOU ARE RUNNING GTAINV ENTER THE CORRECT FACILITY OF EXIT (TAS, LTS		X			
	OR EXIT)					
	GTAINV - END OF PROCESSING	X				

22.5.9 DUARSL (LSD-MMF-CPD-2083) - ARCHIVE STORAGE LOCATION LIST GENERATOR

When a product is logged in or out of TAS/LTTS, the GTLGIN or GTLGOT program activates DUARSL. DUARSL creates a printed listing showing the product and its assigned storage location. DUARSL cannot be activated directly by operator control.

22.5.10 GTNPRT (LSD-MMF-CPD-2064) - GS ID LABEL GENERATOR

The GS identification label print program (GTNPRT) prints any number of labels for either an existing GS product identifier or the next identifier sequence number for a given product type. Upon initiation, this process displays a menu of modes ("next" or "specific") for operator selection. Processing continues as the mode is selected.

To print labels for a "specific" product identifier, the operator enters the product identifier, recording density, number of tracks, interleaving format, number of reels (for multi-volume CCT products) and number of copies of each label to be printed. If the media type of the product identifier is CA (CCT-A) or CP (CCT-P), the operator is asked for GS scene ID.

To print labels for the "next" product identifier, the same information is asked except that the product identifier is replaced by mission number, media type and number of times the label IDs will be generated.

For both modes, the operator must specify whether the product is an original or a copy.

When all of the necessary information has been provided, the label entries are formatted and printed on the Terminet-300 printer.

The GTNPRT prompts and responses are shown in Table 22-17.

A list of operator messages and corresponding actions is given in Table 22-18.

22.5.11 GTFPRT (LSD-MMF-CPD-1065) - FREE FORMAT LABEL GENERATOR

The free format label print program (GTFPRT) prints labels on the Terminet 300 split-platen printer. These labels, whenever needed, are generated by the operator using the VT78 KCRT terminal. Labels produced using this process are used to label various offline items such as HDT drives, CCT drives, TAS storage rack locations, and expendable/spare parts. Replacements can be made for damaged or worn GS labels.

When initiated, the program displays the operator's options of processing a free format label or exiting the program. The appropriate label form appears on the screen for the operator to fill in. This form consists of nine lines, each line consisting of 25 characters. The format of the displayed form is the same as the printed label format. When the form is filled in, it is checked to be sure it is not all blanks. Then, the operator is prompted for the number of copies to be printed. When the operator exits from the program, the requested number of labels are printed on the Terminet-300 printer.

The GTFPRT VT78 screen displays are shown in Figures 22-14 and 22-15.

A list of operator messages and corresponding actions is given in Table 22-19.

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Table 22-17. Prompts and Responses

PROMPT	INPUT	ACTION TAKEN
YOU ARE RUNNING GTNPRT. DO YOU WISH TO PROCEED WITH THE PROGRAM (Y/N)?	Y	CONTINUE WITH PROGRAM
	N	STOP RUNNING PROGRAM
DO YOU WISH TO CONTINUE TO INPUT INFORMATION (Y/N)?	Y	CONTINUE TO INPUT INFORMATION
	N	STOP INPUTTING INFORMATION
PLEASE ENTER 'NEXT' OR 'SPEC'	PROCESSING MODE	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE MISSION NUMBER (4 OR 5)	MISSION NUMBER	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE GS SCENE ID	GS SCENE ID	PROCESS THE INPUT SPECIFIED
PLEASE ENTER MEDIA TYPE (HG, HS, HR, HA, HP, CA, CP, QR, LA, LP, LR, GT, FT, PC, SC, OR PS)	MEDIA TYPE	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE RECORDING DENSITY (20KBPI, 24KBPI, 33.3KBPI, 1600 BPI, 6250 BPI, NA)	RECORDING DENSITY	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE INTERLEAVING FORMAT (BIP, BIL, BSQ, NA)	INTERLEAVING FORMAT	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE NUMBER OF REELS (FROM 01 TO 10, OR NA)	NUMBER OF REELS	PROCESS THE INPUT SPECIFIED
PLEASE ENTER COPY OR MASTER OF PRODUCT ('C' OR 'M')	PRODUCT TYPE	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE SPECIFIC PRODUCT ID (FORMAT: MNSTTYYDDDXX)	PRODUCT ID	PROCESS THE INPUT SPECIFIED

Table 22-17. Prompts and Responses (cont'd)

PROMPT	INPUT	ACTION TAKEN
PLEASE ENTER THE NUMBER OF COPIES OF EACH LABEL (01 - 99)	NUMBER OF COPIES	PROCESS THE INPUT SPECIFIED
PLEASE ENTER THE NUMBER OF LABEL-ID'S (01 - 99)	NUMBER OF LABELS	PROCESS THE INPUT SPECIFIED
DO YOU WISH TO CONTINUE WITH THE CURRENT LABEL (Y/N)?	Y	CONTINUE WITH LABEL
	N	STOP PROCESSING LABEL
PLEASE ENTER GS SCENE ID FOR LABEL NUMBER:_____	GS SCENE ID	PROCESS THE INPUT SPECIFIED

Table 22-18. M   age/Action Matrix

CATEGORY	MESSAGE	ACTION: DO NOT RERUN GTNPRT	ACTION: INPUT DATA AS PROMPTED (MANUAL MODE)	ACTION: FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	ACTION: FOWARD OUTPUT TO SOFTWARE MAINTENANCE	ACTION: FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	ACTION: NONE
FATAL	FATAL ERROR: UNABLE TO FIND COMMON PARAMETER RECORD:_____	X		X			
	FATAL ERROR: VT78 MACRO CALL RETURNED ERROR:_____	X		X			
	FATAL ERROR:_____	X		X	X		
ERROR	ERROR: _____ IS AN INCORRECT RESPONSE. RESPONSE SHOULD BE 'NEXT' OR 'SPEC'.					X	
	ERROR: INVALID MISSION NUMBER:_____					X	
	ERROR: INVALID MEDIA TYPE:_____					X	
	ERROR: INVALID PRODUCT ID:_____					X	
	ERROR: INVALID SCENE ID:_____					X	
	ERROR: INVALID DENSITY RESPONSE:_____					X	
	ERROR: INVALID INTERLEAVING FORMAT:_____					X	
	ERROR: MEDIA IS _____. NUMBER OF REELS SHOULD BE FROM 01 TO 10, OR 'NA'					X	
	ERROR: _____IS AN INVALID NUMBER OF REELS, 'NA' EXPECTED					X	
	ERROR: _____IS AN INCORRECT RESPONSE, RESPONSE SHOULD BE Y OR N					X	
	ERROR: _____IS AN INVALID NUMBER. NUMBER OF COPIES SHOULD BE FROM 01 TO 99.					X	
	ERROR: _____ IS AN INVALID NUMBER. NUMBER OF LABEL ID'S SHOULD BE FROM 01 TO 99.					X	
	ERROR: INVALID MASTER/COPY RESPONSE:					X	

Table 22-18. Message/Action Matrix (Cont'd)

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CATEGORY	MESSAGE	DO NOT RERUN GTNPRT	INPUT DATA AS PROMPTED (MANUAL MODE)	FORWARD OUTPUT TO DATA BASE ADMINISTRATOR	FOWARD OUTPUT TO SOFTWARE MAINTENANCE	FOLLOW ACTION TAKEN BY PROGRAM PROMPTS	NONE
ERROR (CONT'D)	ERROR: INVALID GS LABEL:____					X	
	ERROR: INVALID PARTIAL LABEL:____					X	
INFORMATION	INFO: OPERATOR REQUESTED TERMINATION OF PROGRAM						X
	INFO: NUMBER OF GS LABEL ID'S PROCESSED:____						X
	INFO: YOU WILL BE PROMPTED FOR A GS SCENE ID FOR EACH LABEL						X
OTHER	NEXT - TO CREATE GS IDENTIFICATION LABEL FOR NEXT PRODUCT OF A GIVEN TYPE						X
	SPEC - TO CREATE GS IDENT? ICATION FOR SPECIFIC PRODUCT						X
	GTNPRT - END OF PROCESSING						X

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GTFPRT ------------ FREE FORMAT LABEL PRINT (MENU SCREEN) ------------ GTFPRT

                    ENTER ONE OF THE FOLLOWING

                    1 - FREE FORMAT LABEL SCREEN

                    2 - EXIT
```

Figure 22-14. Menu Screen

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GTFPRT --------- FREE FORMAT LABEL PRINT (ENTRY SCREEN 3) --------- GTFPRT

          FREE FORMAT LABEL FORM

        1 ----------------------
        2 ----------------------
        3 ----------------------
        4 ----------------------
        5 ----------------------
        6 ----------------------
        7 ----------------------
        8 ----------------------
        9 ----------------------

ENTER THE NUMBER OF COPIES DESIRED (00-99)

HIT LINEFEED TO GET TO THE MENU SCREEN
ALL LABELS WILL BE PRINTED OUT AFTER EXITING THE PROGRAM
```

Figure 22-15. Free Format Label Form

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Table 22-19. Message/Action Matrix

CATEGORY	MESSAGE	ACTION: DO NOT RE-RUN DVARSS	ACTION: NONE	ACTION: FORWARD OUTPUT TO SOFTWARE MAINTENANCE
FATAL	FATAL ERROR: UNABLE TO	X		X
INFORMATION	INFORMATION: CONTROL C ABORT WAS PERFORMED		X	
	INFORMATION: LABEL WAS NOT CREATED AS IT WAS BLANK		X	
	INFORMATION: VALID LABEL WAS PROCESSED		X	
	INFORMATION: LABEL WAS NOT CREATED AS SUGGESTED BY COPY NUMBER		X	
	INFORMATION: LABEL WAS NOT CREATED		X	
OTHER	CTFPRT - END OF PROCESSING		X	

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APPENDIX A

CONCEPTUAL DESIGN
FOR THE
MMF PROCESS CONTROL

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1.0 INTRODUCTION

THIS DOCUMENT DESCRIBES THE MANNER IN WHICH THE TRANSACTIONS OF THE MISSION MANAGEMENT FACILITY (MMF) WILL BE CONTROLLED AND INITIATED. THE FOLLOWING DEFINITIONS ARE USED THROUGHOUT THIS DOCUMENT:

1. A SCENARIO IS AN AGGREGATE OF RELATED TRANSACTIONS.

2. A TRANSACTION IS A SEQUENCE OF PROCESSES WHICH ACCOMPLISH A SPECIFIC PURPOSE.

3. A PROCESS CORRESPONDS TO A COMPUTER PROGRAM (RUN-UNIT).

IN ADDITION, IT DEFINES THE OPERATIONAL ENVIRONMENT AND IDENTIFIES THE MANNER IN WHICH DATA BASE SECURITY AND INTEGRITY WILL BE MAINTAINED. TOPICS COVERED ARE:

1. THE MENU INTERFACE IS DEFINED.

2. THE GENERAL FORMAT OF THE DIGITAL CONTROL LANGUAGE (DCL) SKELETONS IS DEFINED.

3. THE PHILOSOPHY BEHIND JOB SUBMITTAL IS OUTLINED.

4. JOB AND PRINT PRIORITIES ARE SPECIFIED.

5. INDIVIDUAL FUNCTIONAL ACCOUNTS ARE DEFINED.

IN SECTION 8.0 A USER PROCESS OPERATION IS DESCRIBED TO DEMONSTRATE A TYPICAL APPLICATION OF THE MENU CONTROLLED PROCESSING SYSTEM.

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2.0 MENU INTERFACE (MMFOCP)

THE MENU PROGRAM (MMFOCP) WILL BE THE MAIN USER INTERFACE INTO THE MMF SYSTEM. THE PROGRAM WILL DISPLAY THE OPTIONS ASSOCIATED WITH ANY GIVEN ACCOUNT AND NO OTHER. WHEN A USER (ANY PRODUCTION CONTROL OPERATOR) LOGS ON TO AN ACCOUNT, HE WILL AUTOMATICALLY HAVE THE APPROPRIATE MENU DISPLAYED. IF THE USER ATTEMPTS TO ABORT THE PROGRAM, THE MENU WILL TRAP IT AND DISPLAY THE MAIN MENU ASSOCIATED WITH THAT ACCOUNT. THEREFORE, UNAUTHORIZED ACCESS TO THE MONITOR WILL BE PREVENTED. FOR A MORE DETAILED DESCRIPTION OF THESE ACCOUNTS, SEE THE ACCOUNTS SECTION.

THE MENU IS INTENDED TO BE A VERY FLEXIBLE AND CONTROLLABLE INTERFACE INTO THE MMF SYSTEM. EACH ACCOUNT WILL HAVE ITS OWN VERSION OF THE MENU TAILORED TO THE INDIVIDUAL PROCESSING REQUIREMENTS. OPERATOR ACCOUNTS WILL HAVE THE FULL RANGE OF CAPABILITIES, WHILE OTHER USERS WILL HAVE SOME SUBSET OF THESE. A USER IS ANYONE WHO LOGS ON TO AN ACCOUNT.

THE MENU WILL HANDLE MOST OF THE TEDIOUS DCL NEEDED TO PERFORM VARIOUS TASKS ON THE SYSTEM. THIS ALLEVIATES THE NEED FOR THE GENERAL USER TO LEARN THE DCL FOR THE DECSYSTEM-20. THE MMF SYSTEM SECURITY WILL ALSO BE ENHANCED BECAUSE THE MENU HAS TOTAL CONTROL OF THE USER'S JOB. IF THE MENU PROGRAM DETERMINES THAT THE USER IS NOT PRIVILEGED TO PERFORM A CERTAIN FUNCTION, THEN IT WILL POLITELY PREVENT HIM FROM DOING SO.

THE USER WILL NOT HAVE TO KNOW THE INDIVIDUAL PROCESSES WHICH FORM A GIVEN TRANSACTION. THE USER SIMPLY INDICATES TO THE MENU WHICH TRANSACTION TO RUN AND THE MENU DOES THE REST. THEREFORE, A NOVICE WITH LITTLE TRAINING WILL BE ABLE TO RUN TRANSACTIONS ON THE MMF SYSTEM.

ON THE FOLLOWING PAGE IS THE ANTICIPATED MAIN MENU CRT SCREEN FOR THE OPERATOR'S CONSOLE.

```
MMFOCP =========== MMF OPERATIONS CONTROL PROGRAM (MAIN MENU) ========== MMFOCP


                SELECT OPTION ==> _


                0 - EXIT

                1 - HELP

                2 - MMF TRANSACTIONS

                3 - MANAGEMENT REPORTS

                4 - DATA BASE EXAMINE, UPDATE AND RECOVERY

                5 - UTILITIES AND SYSTEM STATUS

                6 - TOPS-20 COMMAND MODE

                7 - OPERATOR UTILITIES


MMFOCP =========== MMF OPERATIONS CONTROL PROGRAM (MAIN MENU) ========== MMFOCP
```

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THE FUNCTIONS ON THE SCREEN ARE DEFINED AS FOLLOWS:

0. EXIT - FOR THE OPERATOR, THE MENU PROGRAM WILL TERMINATE AND LEAVE THE OPERATOR IN THE TOPS-20 MONITOR. FOR MOST OTHER USERS, THE PROGRAM WILL TERMINATE AND AUTOMATICALLY LOG THE USER'S TERMINAL OFF THE SYSTEM.

1. HELP - PROVIDE ONLINE HELP TO THE INEXPERIENCED NOVICE OR FORGETFUL EXPERT.

2. MMF TRANSACTIONS - WHEN THIS FUNCTION IS CHOSEN, ANOTHER SCREEN WILL APPEAR DISPLAYING THE NAMES AND A BRIEF DESCRIPTION FOR EACH MMF PROCESSING TRANSACTION ALLOWED. THE TRANSACTIONS LISTED WILL NOT INCLUDE ANY MANAGEMENT REPORTS, A SEPARATE FUNCTION WILL BE AVAILABLE FOR THEM.

3. MANAGEMENT REPORTS - SIMILAR TO THE MMF TRANSACTIONS DESCRIBED ABOVE, ANOTHER SCREEN WILL APPEAR DISPLAYING THE NAMES AND A BRIEF DESCRIPTION FOR EACH MMF MANAGEMENT REPORT TRANSACTION ALLOWED TO BE RUN.

4. DATA BASE EXAMINE, UPDATE AND RECOVERY

   DATA BASE UPDATES - A SPECIALIZED FUNCTION TO CALL THE DBUPDT PROGRAM. ONLY PARTICULAR ACCOUNTS SUCH AS THE OPERATOR OR DATA BASE ADMINISTRATION (DBA) ACCOUNT WILL HAVE THIS CAPABILITY.

   DATA BASE RECOVERY - A SEPARATE FUNCTION BECAUSE OF ITS CRITICAL NATURE. ONLY A SKILLED DATA BASE PERSON WILL BE ALLOWED ACCESS TO IT. THE FUNCTION WILL CALL THE DBMEND PROGRAM.

5. UTILITIES AND SYSTEM STATUS

   SYSTEM STATUS -THIS FUNCTION WILL PROVIDE USEFUL SYSTEM STATUS INFORMATION AT VARIOUS LEVELS OF DETAIL. THE ACTUAL STATUS INFORMATION IS NOT COMPLETELY DEFINED AT THIS TIME. ONE POSSIBLE ITEM MAY SIMPLY BE A LIST OF THE CURRENT JOBS RUNNING ON THE MMF SYSTEM. THE USER MAY THEN DECIDE WHETHER TO START A TRANSACTION OR NOT.

6. TOPS-20 COMMAND MODE - THE USER MAY ISSUE ONE OF A SUBSET OF TOPS-20 MONITOR COMMANDS IN THIS MODE. AFTER THE COMMAND HAS BEEN EXECUTED, THE SYSTEM RETURNS TO THE MENU PROGRAM. THE GENERAL USER WILL BE LIMITED TO VARIOUS NON-DESTRUCTIVE COMMANDS SUCH AS PRINT, DAYTIME, DIRECTORY, ETC.

7. OPERATOR UTILITIES - THERE MAY BE MANY FUNCTIONS THAT THE OPERATOR MAY NEED TO PERFORM OFTEN. SOME OF THESE FUNCTIONS WILL BE IN THE FORM OF UTILITIES FOR ACCESS BY THE OPERATOR. THE LIST OF UTILITIES IS NOT COMPLETELY DEFINED AT THE MOMENT.

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THE MENU PROGRAM WILL BE FILE DRIVEN FOR FLEXIBILITY AND EASE OF MAINTENANCE. EACH ACCOUNT WILL HAVE ONE OR MORE FILES FOR USE BY THE MENU. ALL OF THE FILES WILL BE STORED IN ASCII AND THEY WILL BE CREATED BY ONE OF THE DECSYSTEM-20 TEXT EDITORS.

THE FILE(S) WILL CONTAIN:

1. POINTERS TO ADDITIONAL SCREEN FORMATS FOR USE BY THE PROGRAM. ALL POSSIBLE SCREEN FORMATS WILL APPEAR IN A SINGLE FILE ON THE SYSTEM. THE FILE WOULD BE ACCESSED IN A READ ONLY MODE, SO THAT CONCURRENT MENU PROGRAMS WILL HAVE LITTLE OR NO CONTENTION OVER IT. THE SINGLE FILE SCHEME PROVIDES AN EASY WAY TO MAINTAIN THE SCREEN IMAGES. MODIFICATIONS ONLY NEED TO BE PERFORMED IN ONE PLACE.

2. A LIST OF TRANSACTIONS WHICH MAY BE RUN BY THE USER.

3. VARIOUS SUBMIT (CTL) AND TAKE (CMD) SKELETONS FOR USE IN CREATING BATCH JOBS. DIFFERENT TRANSACTIONS MAY REQUIRE DIFFERENT SKELETONS.

ONLY ALLOWABLE FUNCTIONS WILL APPEAR IN THE USER'S MENU SCREEN. THE FUNCTIONS WILL BE DEFINED BY THE ACCOUNT'S MENU FILE AND THE USER'S OVERALL SECURITY PRIVILEGES.

WHENEVER A FUNCTION IS CHOSEN, ONE OF THE FOLLOWING WILL OCCUR DEPENDING ON THE REQUIREMENTS FOR THE FUNCTION.

1. ANOTHER MENU SCREEN MAY APPEAR ASKING FOR FURTHUR INPUT. WHERE POSSIBLE, THE CHOICES FOR INPUT WILL BE DISPLAYED.

2. THE FUNCTION MAY BE PERFORMED. IF THE FUNCTION IS TO RUN ANOTHER PROGRAM IN MANUAL MODE, THEN THAT PROGRAM WILL BE STARTED AND IT WILL REPLACE THE MENU ON THE SCREEN.

3. AN ERROR MESSAGE MAY APPEAR ON THE CURRENT MENU SCREEN, OR IF THE ERROR IS SEVERE ENOUGH, THE MAIN MENU WILL APPEAR.

4. THE MENU PROGRAM MAY LOG THE USER'S TERMINAL OUT OR, IN THE CASE OF THE OPERATOR, THE PROGRAM WILL RETURN TO THE TOPS-20 MONITOR.

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THE MENU WILL BE IMPLEMENTED IN PHASES. THE PHASES WILL BASICALLY FOLLOW THE ORDER IN THE FOLLOWING LIST. THIS LIST IS ONLY FOR THE OPERATOR VERSION. OTHER VERSIONS WILL SIMPLY BE SUBSETS OF THESE AND WILL BE PHASED IN AS NEEDED.

1. BE ABLE TO EXECUTE GIVEN PROCESSES IN A GIVEN SEQUENCE AND RETURN TO THE MENU. IDEALLY, THE USER CAN RUN A WHOLE TRANSACTION IN MANUAL MODE THEN AUTOMATICALLY RETURN TO THE MENU.

2. COMMAND FILES MAY BE EXECUTED AND BATCH JOBS MAY BE CREATED AND STARTED BY THE MENU. COMMAND FILES MAY HAVE ANY MIXTURE OF MANUAL AND AUTOMATIC PROCESSES WITHIN THE SAME JOB STREAM. USER CREATED COMMAND FILES WILL NOT BE ALLOWED.

3. IN CONTROLLED CIRCUMSTANCES, BE ABLE TO BRANCH TO TOPS-20 SO THAT THE USER CAN EXECUTE MONITOR COMMANDS. THE OPERATOR WILL BE ALLOWED TO PERFORM ANY TOPS-20 COMMAND.

4. ONLINE HELP WILL BE AVAILABLE FOR ALL FUNCTIONS.

5. EXTENSIVE SYSTEM STATUS INFORMATION MAY BE OBTAINED WITHOUT LEAVING THE PROGRAM.

6. AS PART OF THE OPERATOR UTILITIES, THE PROGRAM MAY PROVIDE A LIST OF THE TRANSACTIONS THAT HAVE RUN DURING THE DAY AND A LIST OF TRANSACTIONS THAT SHOULD BE RUN BASED ON THE CURRENT TIME OF DAY. THIS WILL ACT AS A REMINDER TO THE OPERATOR ABOUT WHAT NEEDS TO BE DONE.

3.0 DIGITAL CONTROL LANGUAGE (DCL) SKELETONS

THE MENU INTERFACE FOR OPERATIONAL ACCOUNTS WILL BUILD CONTROL FILES ON AN AS NEEDED BASIS. DCL SKELETONS WILL EXIST HAVING ARGUMENTS WHICH WILL BE SUPPLIED BY THE MENU PROGRAM TO CONSTRUCT CONTROL STREAMS. THE DCL SKELETONS WILL BE MAINTAINED IN THE DBA ACCOUNT. THE DCL SKELETONS WILL BE GENERAL. FOR EXAMPLE, THE FOLLOWING DCL SKELETON COULD BE USED FOR JOB SUBMITTAL OF ANY PROCESS.

```
@TAKE LOGIN
@!*********************** PROCESS  XX **************
@RUN XX/JRN/AUTOMATIC
@IF ERROR GOTO EEXIT
@APPEND XX.PLG  MAIN.PLG
@NEWPRT XX.SUM
@DELETE XX.UIL
@DELETE XX.PLG
@EXPUNGE
@(NEXT PROCESSES, IF ANY)
@GOTO EOJ
@EEXIT:: (ERROR PROCESSING)
@NEWPRT XX.SUM
@NEWPRT XX.ERR
@NEWPRT XX.UIL
@EOJ::
```

THE "XX" WOULD BE THE RUN UNIT NAME. THE ADVANTAGES OF A SKELETON ARE AS FOLLOWS:

1. THE DCL MAINTENANCE WILL BE MINIMIZED.

2. DISK SPACE WILL BE SAVED.

3. ERRORS IN A DCL STREAM CAN BE CORRECTED QUICKLY.

IN THE ABOVE EXAMPLE, THE XX.PLG IS APPENDED TO A MAIN FILE. THIS FILE WILL ACCUMULATE ALL PLGS FOR LATER VIEWING. SUMMARY REPORTS WILL ALWAYS BE PRINTED AND ENOUGH GENERATIONS FOR ONE DAY FOR EACH RUN-UNIT WILL BE KEPT. THE RUN UNIT WILL EXECUTE IN AUTOMATIC MODE AND JOURNALLING IS TURNED ON. IF AN ERROR CONDITION OCCURS THE ERR AND UIL ARE PRINTED.

TRANSACTION CONTROL FILES SHOULD PERFORM CLEAN UP ACTIVITIES UPON EITHER SUCCESSFUL OR UNSUCCESSFUL COMPLETION OF A RUN UNIT.

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IN THE EARLY STAGES OF THE CREATION OF THE MENU PROGRAM, THE JOB STREAMS MAY BE FIXED. AS AN ENHANCEMENT TO THE PROGRAM, THE VARIABLE JOB STREAMS AS DESCRIBED ABOVE WILL BE ADDED.

EACH SKELETON WILL HANDLE THE FOLLOWING RESPONSIBILIES:

1. UPON SUCCESSFUL COMPLETION OF EACH PROCESS (RUN-UNIT) A TRANSACTION WILL:

   1. APPEND THE USER INTERACTION LOG, AND PRODUCTION LOG TO THE CORRESPONDING MASTER SYSTEM FILES.

   2. SEND PRINT FILES, SUCH AS MANAGEMENT REPORTS AND SUMMARY REPORTS, TO THE LINE PRINTER SPOOLER.

   3. DELETE UNNECESSARY FILES AND EXPUNGE TO RECOVER SPACE.

   4. INITIATE THE NEXT PROCESS.

2. UPON UNSUCCESSFUL COMPLETION OF EACH PROCESS (RUN-UNIT), A TRANSACTION WILL:

   1. SEND ERROR REPORTS, SUMMARY FILE AND THE USER INTERACTION LOG TO THE LINE PRINTER.

   2. BYPASS OTHER PROCESSES IN THE TRANSACTION.

   3. INITIATE ANY ERROR PROCESSING.

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3.1 JOB SUBMITTAL

A JOB MAY BE SUBMITTED IN ONE OF FOUR WAYS:

1. INTERACTIVE - LEAST EFFICIENT, MOST CONTROL, REQUIRES OPERATOR TO CONSTANTLY MONITOR THE SYSTEM AND TO PROVIDE INTERACTIVE INPUT.

2. MANUAL SUBMISSION - OPERATOR SUBMITS A JOB IN BATCH. THIS WILL BE SLIGHTLY MORE EFFICIENT THAN THE INTERACTIVE MODE BECAUSE DATA WILL BE PASSED DIRECTLY TO THE PROGRAM WITHOUT HUMAN INTERVENTION. HOWEVER, THE OPERATOR HAD TO SUBMIT THE JOB ORIGINALLY

3. AUTOMATIC CLOCK DRIVEN - MORE EFFICIENT, MORE AUTOMATED THAN MANUAL, CAN BE ADJUSTED EASILY. HOWEVER, IF THE CLOCK STARTUPS ARE NOT PROPERLY TUNED TO THE SYSTEM LOAD, THE OVERALL CPU (CENTRAL PROCESSING UNIT) UTILIZATION WILL HAVE MANY PEAKS AND VALLEYS.

4. AUTOMATIC EVENT DRIVEN - MOST EFFICIENT USE OF THE CPU AND THE I/O (INPUT/OUTPUT) CHANNELS. PROCESSES WITHIN A TRANSACTION WILL BE EFFECTIVELY CLOCK DRIVEN. AS ONE PROCESS IN A TRANSACTION FINISHES, THE FOLLOWING PROCESS WILL AUTOMATICALLY BE STARTED. THE SYSTEM WILL ALMOST RUN ITSELF. TRANSACTIONS MAY ALSO START OTHER TRANSACTIONS TO PROVIDE A FURTHER LEVEL OF EVENT DRIVEN SUBMISSION.

   THE OPERATOR HAS LESS CONTROL OVER THE JOB MIX AT ANY ONE TIME BECAUSE JOBS MAY START UP INDEPENDENTLY. THE DISTRIBUTION OF CPU UTILIZATION WILL BE RELATIVELY SMOOTHER.

THE MMF SYSTEM WILL BE A HYBRID OF THESE TYPES. AS DATA BECOMES AVAILABLE FROM CSF, DRRTS AND THE OTHER FACILITIES AND SUBSYSTEMS, THE OPERATOR WILL START UP THE PROPER TRANSACTIONS. THE MENU PROGRAM MAY HELP THE OPERATOR BY SPECIFYING WHICH JOBS NEED TO BE RUN BASED ON THE TIME OF DAY. MUCH OF THE NORMAL DAY-TO-DAY PROCESSING MAY BE HANDLED BY A "SUPER" SUBMIT FILE. THE JOB STREAM WOULD DO NOTHING BUT SUBMIT OTHER BATCH JOBS TO BE STARTED AT SOME SPECIFIC TIME OR SOME DELTA INTERVAL.

4.0 DECNET DIRECTORIES

DECNET FILES WILL RESIDE IN PARTICULAR DIRECTORIES. THESE FILES WILL OPERATE WITHIN THE FRAMEWORK ESTABLISHED IN THE ICDS (MMF/IGF,MMF/CSF). THE ICDS HAVE ESTABLISHED NAMING CONVENTIONS AND FILE STRUCTURES FOR FILES TRANSFERRED BETWEEN FACILITIES. HOWEVER, DIRECTORIES FOR THESE FILES HAVE NOT BEEN ASSIGNED. THEREFORE, THE FOLLOWING CONVENTIONS ARE ESTABLISHED FOR THE DIRECTORY NAMES.

DIRECTORY NAMES
FOR MMF

		RECEIVING	SENDING
IGF	DRRTS	STR:<DRRTS-MMF>	STR:<MMF-DRRTS>
	MIPS	STR:<MIPS-MMF>	STR:<MMF-MIPS>
	PCS	STR:<PCS-MMF>	STR:<MMF-PCS>
CSF		STR:<CSF-MMF>	STR:<MMF-CSF>

THE DIRECTORIES WILL BE MAPPED TO REAL DEVICES. TAPE BACKUP FOR THE DECNET LINK WILL USE THE DECNET MAGNETIC TAPE BACKUP ACCOUNT.

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5.1 PRINT PRIORITIES

THE FOLLOWING GUIDELINES SHOULD BE ADHERED TO:

1. ONLY PRINT PROGRAM UILS, AND PLGS WHEN NECESSARY. DO NOT PRINT AFTER THE EXECUTION OF EACH RUN-UNIT.

2. BATCH OUTPUT, SUCH AS FROM REPORT PROGRAMS, SHOULD HAVE A LOW PRIORITY. BATCH LOG FILES SHOULD NOT BE PRINTED UNLESS NEEDED.

3. AS A DEFAULT, THE PRIORITY OF A PRINT FILE CAN BE BASED ON ITS SIZE.

4. ERROR REPORTS SHOULD HAVE A HIGH PRIORITY.

5. THE OPERATOR MUST HAVE THE ABILITY TO OVERRIDE THE PRINT PRIORITIES ON DEMAND.

6. USE OF THE PRINT SPOOLER PROGRAM, NEWPRT, IS ENCOURAGED. NEWPRT PREVENTS THE FILE CONTENTS FROM BEING OVERWRITTEN IF ANOTHER OCCURENCE OF THE SAME TRANSACTION IS RUN, BY MAKING A COPY OF THE PRINT FILE. NEWPRT ALSO HAS THE CAPABILITY TO PRINT ONLY SELECTED PORTIONS OF A FILE WHICH MAY BE HELPFUL WHEN ONLY A SMALL SECTION OF A LARGE REPORT IS WANTED.

7. ALL PROGRAM SUMMARIES WILL BE PRINTED USING NEWPRT.

6.0 ACCOUNTS

AN ACCOUNT IS ESTABLISHED IN ORDER THAT A USER MAY LOG ONTO A COMPUTER AND PERFORM SYSTEM LEVEL COMMANDS. PRIVILEGES CAN BE ESTABLISHED FOR ANY GIVEN ACCOUNT TO BE TAILORED TO THE NEEDS AND FUNCTIONS ASSOCIATED WITH THAT ACCOUNT.

IN SOME INSTANCES IT WILL BE REQUIRED TO HAVE ONLY ONE USER PER ACCOUNT AT ANY GIVEN TIME. IN OTHER ACCOUNTS MULTIPLE USERS WILL BE ALLOWED. THE CRITERIA FOR THIS WOULD BE BASED ON WHETHER OR NOT MULTIPLE USERS ON ANY GIVEN ACCOUNT COULD DAMAGE THE DATA BASES.

6.1 DATA BASE ADMINISTRATION (DBA) ACCOUNTS

THE DATA BASE ADMINISTRATION ACCOUNT WILL BE THE CENTRAL POINT IN THE OPERATIONAL SYSTEM. FUNCTIONALLY, EVERY OTHER ACCOUNT WOULD BE A SUBSET OF THIS ACCOUNT. IF NECESSARY, THE ENTIRE OPERATIONAL SYSTEM COULD BE RUN FROM THIS ACCOUNT. GREAT CARE MUST BE EXERCIZED WITH THIS ACCOUNT AND ONLY VERY KNOWLEDGEABLE USERS SHOULD HAVE ACCESS.

BY DEFINITION THE DBA WILL HAVE ONE ACCOUNT FOR EACH DATA BASE, PRODUCTION AND CROSS REFERENCE. THIS WILL ALLOW INDEPENDENCE AND PROTECTION FOR EACH DATA BASE.

6.1.1 DBA PRODUCTION (LSATD) ACCOUNT - ACCESS SHOULD INCLUDE ALL DATA BASE AREAS, FILES, DECNET FILES, DIRECTORIES, AND ACCOUNTS RELATED TO THE PRODUCTION (LSATD) DATA BASE.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
DATA BASE CLEAN UP	EXPIRED DATA PURGE	TDB
DATA BASE VERIFICATION	AREA RECORD SUMMARY	DVARSS,DVARSA
	CHAIN CHASER	DVCHCH
	MAIN IMAGE BIT VERIFIER	DVMBIV
DATA BASE MAINTENANCE	PRODUCTION DATA BASE UNLOAD/LOAD	DBUNLD,DBLOAD
	PRODUCTION DATA BASE UPDATE	DBUPDT

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6.1.2 DBA CROSS REFERENCE (DDLSAT) ACCOUNT -

ACCESS SHOULD INCLUDE ALL DATA BASE AREAS, FILES, DIRECTORIES, AND ACCOUNTS RELATED TO THE CROSS REFERENCE (DDLSAT) DATA BASE.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT

SCENARIO	TRANSACTION	PROCESS
DATA BASE MAINTENANCE	CROSSREFERENCE DATA BASE UNLOAD/LOAD ...	DDUNLD,DDLOAD
	CROSSREFERENCE DATA BASE UPDATE	DDUPDT
SOFTWARE DEVELOPMENT TOOLS	DICTIONARY REPORTS	DDDDBA,DDDICT

6.2 OPERATIONAL ACCOUNTS

THE FOLLOWING SECTION DEFINES THE OPERATIONAL ACCOUNTS AND THE ASSOCIATED TRANSACTIONS. THE TRANSACTIONS ARE DEFINED IN MORE DETAIL IN THE " HMF OPERATIONAL SCENARIOS ". THESE TRANSACTIONS SHOULD BE LIMITED TO THESE ACCOUNTS TO PROTECT THE INTEGRITY OF THE PRODUCTION DATA BASE. IN ADDITION, EACH ACCOUNT SHOULD BE CAPABLE OF SUBMITTING ONLY THESE TRANSACTIONS.

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6.2.1 MULTI-SPECTRAL SCANNER (MSS) SCENARIO ACCOUNT -

THIS ACCOUNT IS ASSOCIATED WITH THE DEC 2050 (MMF-M) AND WITH ANY MSS PROCESSING.

UPDATE ACTIVITY AGAINST THE PRODUCTION DATA BASE (LSATD) WOULD ORIGINATE FROM THIS ACCOUNT. THEREFORE, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR ALL PRODUCTION DATA BASE AREAS.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
USER REQUEST FOR COVERAGE	BATCH USER AND ORDER ENTRY	RSTAIN,RSUDEN, RSUBEN
	USER ORDER STATUS MODIFICATION	RSUOSM
	MMF-M MISSION PLANNING	FCCRGN,FCCRFM DECNET
	MMF-M FLIGHT SEGMENT SCHEDULING	FCCRGN,FCCRFM DECNET
	MMF-M ACQUISITION ACCOUNTING	DECNET,FAFXFM FACRFS,FACRFB RSPACO,RSUOCO

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MSS ARCHIVE GENERATION SUPPORT	PCS PHASE 1 SCHEDULING	DECNET,FAFXER, FAMTIN
	PCS PHASE 1 COMPLETION NOTIFICATION	FATEPK,FATECP
	GSTDN DATA RECEIPT	GHXTRE
	PCS PHASE 2 SCHEDULING	DECNET,GXDREC, GOHASS,GADENT, GPPCGN
	PCS PHASE 2 COMPLETION NOTIFICATION	GPPCFB,GAAGEN, GADINV
	ARCHIVE GENERATION SCHEDULING	GPAGEN,GXIALO, DECNET
	ARCHIVE COMPLETION NOTIFICATION	DECNET,GXIREC, GOHASS,GPIAFV, GPIAFA,GPARCO,
	GHIT GENERATION	GGGHAM
	ARCHIVE DISSEMINATION SCHEDULING	GPDGEN
	ARCHIVE DISSEMINATION COMPLETION NOTIFICATION	DECNET,GXDREC, GOHASS,GPDCFB, RSPACO,RSU
	EDC DATA RECEIPT	GTLGOT
QA/PEPG PRODUCT GENERATION	PEPG PRODUCT SCHEDULING	GSSOPR,GPPGEN, DECNET
	CCT COMPLETION NOTIFICATION	DECNET,GXPREC, GOHASS,GPTAFB
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GOHASS,GPFIFB, GPFGEN,GPFLFB
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GPQAFB,GPFGEN, GPFLFB
CONTROL POINT LIBRARY MAINTENANCE	RETROSPECTIVE CONTROL POINT SCHEDULING	DECNET,GXPREC, GACPDI,GSRTLB
	CONTROL POINT SELECTION	GACPDS
	CONTROL POINT LIBRARY UPDATE	DECNET,GXPREC, GACPCU

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REWORK AND WORK AROUNDS	TELEMETRY REWORK	GSRRTD
	ARCHIVE REGENERATION	GSARGN,GPAGEN, GXIALO,DECNET
	MIPS REALLOCATION	GXIRAL,DECNET
	GHIT REWORK	GGGHAM
	UPLINK WORK AROUND SCHEDULING	DECNET,GXDREC, GOHASS,GPUCFB, GPDGEN,DECNET
	UPLINK WORK AROUND COMPLETION NOTIFICATION	DECNET,GXDREC, GOHASS,GPUCFB, GPSHGN,RSPACO, RSUOCO
	SHIPPING PROCESS REQUEST FEEDBACK	GPSHFB
	EDC FAILED RECEIPT	GSRHCU,GPDGEN, DECNET,GSPRGN, GPPGEN,DECNET
PRODUCT ASSESSMENT AND VALIDATION	QUALITY ASSESSMENT ENTRY	DECNET,GXIREC, GOHASS
	HDT/CCT VERIFICATION AND DUMP SCHEDULING	GHVDGN
	HDT/CCT VERIFICATION AND DUMP COMPLETION	DECNET,GXPREC GHVDFB
	INVENTORY TAPE DUMP	GHXDMP
DATA BASE CLEAN UP	PCD/SCD SAVE/RESTORE	GSPSSR

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6.2.2 MSS MEDIA TRACKING ACCOUNT -

THIS ACCOUNT IS ASSOCIATED WITH THE DEC 2050 (MMF-M) AND WITH ANY MSS PROCESSING.

UPDATE ACTIVITY AGAINST THE PRODUCTION DATA- BASE (LSATD) WOULD ORIGINATE FROM THIS ACCOUNT. THEREFORE, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR ALL PRODUCTION DATA BASE AREAS. IN ADDITION, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR THE SAVE TAPE AREA OF THE CROSS REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
MEDIA TRACKING	PRODUCT RETRIEVAL REQUEST	GTRETR
	MEDIA LOG OUT	GTLGOT
	MEDIA LOG IN	GTLGIN
	MOVE ORDER GENERATION	GTMVRQ
	ARCHIVE LOCATION ENTRY	GTALOC,GSARSL
	ARCHIVE INVENTORY REPORT	GTAINV
	LTTS MOVE GENERATION	GTLTTS,GTLGIN
	SAVE TAPE TRACKING ENTRY	GHSLIB
	GS LABEL GENERATION	GTNPRT
	FREE FORM LABEL GENERATION	GTFPRT

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6.2.3 THEMATIC MAPPER (TM) SCENARIO ACCOUNT -

THIS ACCOUNT IS ASSOCIATED WITH THE DEC 2060 (MMF-T) AND WITH ANY TM PROCESSING.

UPDATE ACTIVITY AGAINST THE PRODUCTION DATA - BASE (LSATD) WOULD ORIGINATE FROM THIS ACCOUNT. THEREFORE, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR ALL PRODUCTION DATA BASE AREAS. IN ADDITION, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR THE SAVE TAPE AREA OF THE CROSS REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
USER REQUEST FOR COVERAGE	BATCH USER AND ORDER ENTRY	RSTAIN,RSUDEN, RSOBEN
	USER ORDER STATUS MODIFICATION	RSUOSM
	MMF-T MISSION PLANNING	FCCRGN
	MMF-T FLIGHT SEGMENT SCHEDULING	FCCRGN
	MMF-T ACQUISITION ACCOUNTING	FACRFB,RSPACO RSUOCO

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TM ARCHIVE GENERATION GENERATION SUPPORT	TM PCD DIRECTORY INGEST	DECNET,FAF[illegible], TBD ,FATPTD, RMUNTA
	PCS PHASE 1 SCHEDULING	GTLGIN,FATPIN
	PCS PHASE 1 COMPLETION NOTIFICATION	FATEPK,FATECP
	PCS PHASE 2 SCHEDULING	DECNET,GXDREC, TBD ,GQHASS, GADENT,GPPCGN
	PCS PHASE 2 COMPLETION NOTIFICATION	GPPCFB,GAAGEN, GADINV
	ARCHIVE GENERATION SCHEDULING	GPAGEN,GXIALO, DECNET,GASTGN
	ARCHIVE COMPLETION NOTIFICATION	DECNET,GXIREC, GQHASS,GPIAFV, GPIAFA,GPARCO, RSPACO,RSUOCO
QA/PEPG PRODUCT GENERATION	PEPG PRODUCT SCHEDULING	GSSUPR,GPPGEN, DECNET
	CCT COMPLETION NOTIFICATION	DECNET,GXP[illegible]C, GQHASS,GPTAFB
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GQHASS,GPFIFB, GPFGEN,GPFLFB
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GPQAFB,GPFGEN, GPFLFB

M PRODUCT GENERATION	INITIAL PRODUCT SCHEDULING	GSSOPR,GPIGEN, GPPGEN,GXIALO, DECNET
	INITIAL PRODUCT COMPLETION NOTIFICATION	DECNET,GXIREC, GQHASS,GPINFV, GPINFA,GPPGEN, GPDGEN,GXIALO, TBD ,DECNET
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GQHASS,GPFIFB, GPFGEN
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC, GPQAFB,GPFGEN
	FILM DISSEMINATION	GPFLFB,GGGFIT, GPSLGN
	FILM DISSEMINATION COMPLETION	GPSLFB,RSPACO, RSUOCO
	CCT COMPLETION NOTIFICATION	DECNET,GXPREC, GQHASS,GPTAFB, GPCGEN
	CCT DISSEMINATION	GPCCFB,GPSCGN
	CCT DISSEMINATION COMPLETION	GPSCFB,RSPACO, RSUOCO
	HDT DISSEMINATION	DECNET,GXDREC, TBD ,GQHASS, GPUCFB,GGGHAT, GGGHPT,GPSHGN
	HDT DISSEMINATION COMPLETION	GPSHFB,RSPACO, RSUOCO
CONTROL POINT LIBRARY MAINTENANCE	RETROSPECTIVE CONTROL POINT SCHEDULING .	DECNET,GXPREC, GACPDI,GSRTLB
	CONTROL POINT SELECTION	GACPDS
	CONTROL POINT LIBRARY UPDATE	DECNET,GXPREC GACPCU

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REWORK AND WORK AROUNDS	TELEMETRY REWORK	GSRRTD
	ARCHIVE REGENERATION	GSARGN,GPAGEN, GXIALU,DECNET
	TIPS REALLOCATION	GXIRAL,DECNET
	GHIT REWORK	GGGHAM
	UPLINK WORK AROUND SCHEDULING	DECNET,GXDREC, GOHASS,GPUCFB, GPDGEN,DECNET
	UPLINK WORK AROUND COMPLETION NOTIFICATION	DECNET,GXDREC, GQHASS,GPUCFB, GPSHGN,RSPACO, RSUOCO
	SHIPPING PROCESS REQUEST FEEDBACK	GPSHFB
	EDC FAILED RECEIPT	GSRHCU,GPDGEN, DECNET,GSPRGN, GPPGEN,DECNET
PRODUCT ASSESSMENT AND VALIDATION	QUALITY ASSESSMENT ENTRY	DECNET,GXIREC, GQHASS
	HDT/CCT VERIFICATION AND DUMP SCHEDULING	GHVDGN
	HDT/CCT VERIFICATION AND DUMP COMPLETION	DECNET,GXPREC, GHVDFB
	INVENTORY TAPE DUMP	GHXDMP
DATA BASE CLEAN UP	PCD/SCD SAVE/RESTORE	GSPSSR

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6.2.4 TM MEDIA TRACKING ACCOUNT -

THIS ACCOUNT IS ASSOCIATED WITH THE DEC 2060 (MMF-T) AND WITH ANY TM PROCESSING.

UPDATE ACTIVITY AGAINST THE PRODUCTION DATA BASE (LSATD) WOULD ORIGINATE FROM THIS ACCOUNT. THEREFORE, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR ALL PRODUCTION DATA BASE AREAS. IN ADDITION, READ AND WRITE PRIVILEGES WILL BE ESTABLISHED FOR THE SAVE TAPE AREA OF THE CROSS REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
MEDIA TRACKING	PRODUCT RETRIEVAL REQUEST	GTRETR
	MEDIA LOG OUT	GTLGOT
	MEDIA LOG IN	GTLGIN
	MOVE ORDER GENERATION	GTMVRG
	ARCHIVE LOCATION ENTRY	GTALOC,GSARSL
	ARCHIVE INVENTORY REPORT	GTAINV
	LTTS MOVE GENERATION	GTLTTS,GTLGIN
	SAVE TAPE TRACKING ENTRY	GHSLIB
	NASA LABEL GENERATION	GTNPRT
	FREE FORM LABEL GENERATION	GTFPRT

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6.2.5 INTERACTIVE USER ACCOUNT

RUN UNITS WHICH CANNOT BE EXECUTED MANUALLY AND FALL OUTSIDE OF MAIN LINE PROCESSING WOULD BE ASSOCIATED WITH THIS ACCOUNT. UPDATE ACTIVITY WILL OCCUR AGAINST THE PRODUCTION DATA BASE (LSATD). THEREFORE, READ AND WRITE PRIVILEGES FOR SOME PRODUCTION DATA BASE AREAS MUST BE AVAILABLE.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
USER REQUEST FOR COVERAGE	INTERACTIVE USER DATA MAINTENANCE	RSUDEN
	INTERACTIVE STANDING ORDER ENTRY FOR ACQUISITION	RSSOEN
USER REQUEST FOR PRODUCT	INTERACTIVE STANDING ORDER ENTRY FOR PRODUCT	RSUDEN,RSSOEN
	INTERACTIVE RETROSPECTIVE ORDER ENTRY ..	RSUDEN,RSROEN
PROCESSING REPORTS	IMAGERY BROWSE	RMBRWS

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6.2.6 PRODUCTION TABLE MAINTENANCE ACCOUNT -

THIS ACCOUNT SHOULD ONLY HAVE READ AND WRITE ACCESS TO THE COMMON PARAMETER, ERROR, AND ROUTE AREAS OF THE PRODUCTION (LSATD) DATA BASE. NO OTHER DATA BASE AREAS AND NO DECNET FILE ACCESS SHOULD BE NECESSARY.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
PRODUCTION TABLE MAINTENANCE	ROUTE TABLE MAINTENANCE	GSROUT
	COMMON PARAMETERS MAINTENANCE	RSCPUP
	ERROR CODE TABLE MAINTENANCE	RMECEN

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6.2.7 CONTROL POINT DELETE ACCOUNT -

THIS ACCOUNT WILL BE SECURED TO PROTECT CONTROL POINTS. READ AND WRITE ACCESS TO THE CONTROL POINT AREA OF THE PRODUCTION DATA BASE (LSATD) WILL BE ALLOWED.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
CONTROL POINT LIBARY MAINTENANCE	CONTROL POINT CHIP DELETE	GACPDU

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6.2.8 DECNET MAGNETIC TAPE BACKUP ACCOUNT -

WHEN DECNET IS DOWN THIS ACCOUNT EXISTS TO SUPPORT THIS EMERGENCY SITUATION. SINCE IT APPEARS THAT THIS WILL BE A HECTIC SITUATION, IT WILL REQUIRE THE FULL ATTENTION OF ANY PERSONNEL WHO LOG ONTO THIS ACCOUNT.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
REWORK AND WORK AROUNDS	DECNET MAGNETIC TAPE BACK UP	DTBDEC

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6.2.9 MANAGEMENT REPORT ACCOUNT -

PRECAUTION MUST BE USED IN JOB SUBMITTAL ON THIS ACCOUNT SINCE MANY OF THE PROCESSES ARE RESOURCE CONSUMERS. USE OF THIS ACCOUNT SHOULD BE COORDINATED AMONG THE PERSONNEL WHO LOG ONTO THIS ACCOUNT. RUN UNITS USE ALL DATA BASE AREAS IN RETRIEVAL MODE; THEREFORE, IT SHOULD HAVE READ ONLY PRIVILEGES ON DATA BASE AREAS.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
PROCESSING REPORTS	USER/ORDER INVENTORY	RMUORD
	CANDIDATES FOR ACQUISITION	RFCAAQ
	CANDIDATE REQUEST RESOLUTION	RFCARI,RFCARR
	CYCLE REPORT	RFCYIN,RFCYRT
	WORK IN PROGRESS REPORT	RMWIPI,RM[illegible]R
	IMAGE GENERATION STATISTICS	RMIGST
	REWORK TRACKING	RMRETR
	MAPS	RFMAPI,RFMAPS
	HDT-R TAPE STATUS LOG	RMHRSL
	TAPE/FILM INVENTORY	RMTFIN
	GROUND CONTROL POINT DUMP	RMGCPD
	CLOUD COVER ASSESSMENT	RECCAS
	COVERAGE CATALOG	RMCMMS,RMCMTM
	PATH/ROW, LATITUDE/LONGITUDE XREFERENCE.	RFPRLL

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6.2.10 SOFTWARE DEVELOPMENT TOOLS ACCOUNT -

THIS ACCOUNT SHOULD ONLY HAVE READ ACCESS TO THE CROSS-REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
SOFTWARE DEVELOPEMENT TOOLS	CROSSREFERENCE REPORTS	DDSCHD,DDARXF, DDRFXF,DDCOMD, DDSUMD,DDSSMD, DDAMXF,DDRMXF, DDFMXF,DDBCDE, DDMCNT

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6.2.11 PDR MAINTENANCE ACCOUNT -

THIS ACCOUNT SHOULD ONLY HAVE READ AND WRITE ACCESS TO THE PDR AREA OF THE CROSS REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
PDR TRACKING	PDR MAINTENANCE	RPENUP
	PDR REPORTS	RPOPCL,RPDRAN, RPDRSR,RPDRST

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6.2.12 ESR MAINTENANCE ACCOUNT -

THIS ACCOUNT SHOULD ONLY HAVE READ AND WRITE ACCESS TO ESR AREA OF THE CROSS-REFERENCE DATA BASE (DDLSAT).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
ESR TRACKING GENERATION	ESR MAINTENANCE	REENUP
	ESR REPORT TRACKING	REOPCL,RECONF

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6.2.13 INVENTORY MAINTENANCE ACCOUNT -

THIS ACCOUNT SHOULD ONLY HAVE READ AND WRITE ACCESS TO INVENTORY AREA OF THE LSATD DATA BASE.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
INVENTORY TRACKING	INVENTORY MAINTENANCE	RIENUP
	INVENTORY REPORT GENERATION	RIDLOR,RIINIR RILOUR,RINEWR RIOTOR,RIREOR RISPAR,RISTIR RIVEND

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6.2.14 QUALITY ASSURANCE (QA) ACCOUNT -

THIS ACCOUNT WILL HAVE ACCESS TO THE PRODUCTION DATA BASE (LSATD).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT

SCENARIO	TRANSACTION	PROCESS
REWORK AND WORK AROUNDS	ARCHIVE REGENERATION	GSARGN,GPAGEN GXIALO,DECNET
	GHIT REWORK	GGGHAM
QA/PEPG PRODUCT GENERATION	PEPG PRODUCT SCHEDULING	GSSOPR,GPPGEN DECNET
	CCT COMPLETION NOTIFICATION	DECNET,GXPREC GQHASS,GPTAFB
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC GQHASS,GPFIFB GPFGEN,GPFLFB
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC GPQAFB,GPFGEN GPFLFB
USER REQUEST FOR PRODUCT	INTERACTIVE STANDING ORDER ENTRY .... FOR PRODUCT	RSUDEN,RSSOEN
	INTERACTIVE RETROSPECTIVE ORDER ENTRY ..	RSUDEN,RSROEN
PRODUCT ASSESSMENT AND VALIDATION	QUALITY ASSESSMENT ENTRY	DECNET,GXIREC GQHASS
	HDT/CCT VERIFICATION AND DUMP SCHEDULING	GHVDGN
	HDT/CCT VERIFICATION AND DUMP COMPLETION	DECNET,GXPREC GHVDFB
	INVENTORY TAPE DUMP	GHXDMP

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PROCESSING REPORTS

USER/ORDER INVENTORY	RMUORD
CANDIDATES FOR ACQUISITION	RFCAAQ
CANDIDATE REQUEST RESOLUTION	RFCARI,RFCARR
CYCLE REPORT	RFCYIN,RFCYRT
WORK IN PROGRESS REPORT	RMWIPI,RMWIPR
IMAGE GENERATION STATISTICS	RMIGST
REWORK TRACKING	RMRETR
MAPS	RFMAPI,RFMAPS
HDT-R TAPE STATUS LOG	RMHRSL
TAPE/FILM INVENTORY	RMTFIN
GROUND CONTROL POINT DUMP	RMGCPD
CLOUD COVER ASSESSMENT	RECCAS
COVERAGE CATALOG	RMCMMS,RMCMTM
PATH/ROW, LATITUDE/LONGITUDE XREFERENCE.	RFPRLL
IMAGERY BROWSE	RMBRWS

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6.2.15 PEPG ACCOUNT -

THIS PERFORMANCE EVALUATION PRODUCT GENERATION (PEPG) ACCOUNT WILL HAVE ACCESS TO THE PRODUCTION DATA BASE (LSATD).

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
QA/PEPG PRODUCT GENERATION	PEPG PRODUCT SCHEDULING	GSSUPR,GPPGEN, DECNET
	CCT COMPLETION NOTIFICATION	DECNET,GXPREC GOHASS,GPTAFB
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC GOHASS,GPFIFB GPFGEN,GPFLFB
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC GPQAFB,GPFGEN GPFLFB
USER REQUEST FOR PRODUCT	INTERACTIVE STANDING ORDER ENTRY .... FOR PRODUCT	RSUDEN,RSSOEN
	INTERACTIVE RETROSPECTIVE ORDER ENTRY ..	RSUDEN,RSROEN
PRODUCT ASSESSMENT AND VALIDATION	HDT/CCT VERIFICATION AND DUMP SCHEDULING	GHVDGN
	HDT/CCT VERIFICATION AND DUMP COMPLETION	DECNET,GXPREC GHVDFB

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PROCESSING REPORTS

USER/ORDER INVENTORY .... RMUORD

CANDIDATES FOR ACQUISITION .... RFCAAQ

CANDIDATE REQUEST RESOLUTION .... RFCARI,RFCARR

CYCLE REPORT .... RFCYIN,RFCYRT

WORK IN PROGRESS REPORT .... RMWIPI,RMWIPR

IMAGE GENERATION STATISTICS .... RMIGST

REWORK TRACKING .... RMRETR

MAPS .... RFMAPI,RFMAPS

HDT-R TAPE STATUS LOG .... RMHRSL

TAPE/FILM INVENTORY .... RMTFIN

GROUND CONTROL POINT DUMP .... RMGCPD

CLOUD COVER ASSESSMENT .... RECCAS

COVERAGE CATALOG .... RMCMMS,RMCMTM

PATH/ROW, LATITUDE/LONGITUDE XREFERENCE. RFPRLL

IMAGERY BROWSE .... RMBRWS

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6.3 FACILITY SUPPORT ACCOUNTS

THESE ACCOUNTS EXIST IN SUPPORT OF OTHER FACILITIES AND ALLOW ACCESS TO THE PARTS OF THE DATA BASE WHICH THESE FACILITIES WILL HAVE TO MODIFY OR HAVE KNOWLEDGE OF. THESE ACCOUNTS MAY BE REDUNDANT WITH PREVIOUSLY DEFINED OPERATIONAL ACCOUNTS.

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6.3.1 DRRTS ACCOUNT (IGF) -

PERSONNEL WHO LOG ONTO THIS ACCOUNT WILL HAVE ACCESS TO THE DECNET FILES ASSOCIATED WITH THIS SUB-FACILITY, THAT IS DIRECTORIES <MMF-DRRTS> AND <DRRTS-MMF>.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
MEDIA TRACKING	PRODUCT RETRIEVAL REQUEST	GTRETR
	MEDIA LOG OUT	GTLGOT
	MEDIA LOG IN	GTLGIN
	MOVE ORDER GENERATION	GTMVRQ
	ARCHIVE LOCATION ENTRY	GTALOC,GSARSL
	ARCHIVE INVENTORY REPORT	GTAINV
	LTTS MOVE GENERATION	GTLTTS,GTLGIN
	SAVE TAPE TRACKING ENTRY	GHSLIB
	NASA LABEL GENERATION	GTNPRT
	FREE FORM LABEL GENERATION	GTFPRT
MSS ARCHIVE GENERATION SUPPORT	GSTDN DATA RECEIPT	GHXTRE
	PCS PHASE 2 SCHEDULING	DECNET,GXDREC, GQHASS,GADENT, GPPCGN
	ARCHIVE DISSEMINATION SCHEDULING	GPDGEN
	ARCHIVE DISSEMINATION COMPLETION .... NOTIFICATION	DECNET,GXDREC, GQHASS,GPUCFB, RSPACO,RSUOCO
TM ARCHIVE GENERATION GENERATION SUPPORT	PCS PHASE 2 SCHEDULING	DECNET,GXDREC TBD ,GQHASS GADENT,GPPCGN

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EWORK AND WORK AROUNDS	UPLINK WORK AROUND SCHEDULING	DECNET,GXDREC, GQHASS,GPUCFB, GPDGEN,DECNET
	UPLINK WORK AROUND COMPLETION NOTIFICATION	DECNET,GXDREC, GQHASS,GPUCFB, GPSHSN,NSPACO, NSUDCO

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6.3.2 MIPS ACCOUNT (IGF)

PERSONNEL WHO LOG ONTO THIS ACCOUNT WILL HAVE ACCESS TO THE DECNET FILES ASSOCIATED WITH THIS SUB-FACILITY, THAT IS DIRECTORIES <MMF-MIPS> AND <MIPS-MMF>.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
MEDIA TRACKING	PRODUCT RETRIEVAL REQUEST	GTRETR
	MEDIA LOG OUT	GTLGOT
	MEDIA LOG IN	GTLGIN
	MOVE ORDER GENERATION	GTMVRQ
	ARCHIVE INVENTORY REPORT	GTAINV
	SAVE TAPE TRACKING ENTRY	GHSL1B
	NASA LABEL GENERATION	GTNPRT
	FREE FORM LABEL GENERATION	GTFPRT
CONTROL POINT LIBRARY MAINTENANCE	RETROSPECTIVE CONTROL POINT SCHEDULING .	DECNET,GXPREC, GACPDI,GSRTLB
	CONTROL POINT SELECTION	GACPDS
	CONTROL POINT LIBRARY UPDATE	DECNET,GXPREC, CACPCU

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PROCESSING REPORTS (GROUND)	USER/ORDER INVENTORY	RMUORD
	WORK IN PROGRESS REPORT	RMWIPI,RMWIPR
	IMAGE GENERATION STATISTICS	RMIGST
	REWORK TRACKING	RMRETR
	HDT-R TAPE STATUS LOG	RMHRSL
	TAPE/FILM INVENTORY	RMTFIN
	GROUND CONTROL POINT DUMP	RMGCPD
	COVERAGE CATALOG	RMCMMS,RMCMTM
	IMAGERY BROWSE	RMBRWS
PRODUCTION TABLE MAINTENANCE	SPACECRAFT PARAMETERS MAINTENANCE	RWRSUP,RWRSEX
MSS ARCHIVE GENERATION SUPPORT	ARCHIVE GENERATION SCHEDULING	GPAGEN,GXIALO DECNET
	ARCHIVE COMPLETION NOTIFICATION	DECNET,GXIREC GOHASS,GPIAFV GPIAFA,GPARCO
TM ARCHIVE GENERATION GENERATION SUPPORT	ARCHIVE GENERATION SCHEDULING	GPAGEN,GXIALO DECNET,GASTGN
	ARCHIVE COMPLETION NOTIFICATION	DECNET,GXIREC GOHASS,GPIAFV GPIAFA,GPARCO RSPACO,RSUOCU
TM PRODUCT GENERATION	INITIAL PRODUCT SCHEDULING	GSSOPR,GPIGEN GPPGEN,GXIALO DECNET
	INITIAL PRODUCT COMPLETION NOTIFICATION	DECNET,GXIREC GOHASS,GPINFV GPINFA,GPPGEN GPDGEN,GXIALO TBD ,DECNET
	241 FILM COMPLETION NOTIFICATION	DECNET,GXPREC GOHASS,GPFIFB GPFGEN
	QA FILM COMPLETION NOTIFICATION	DECNET,GXPREC GPQAFB,GPFGEN

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6.3.3 PCS ACCOUNT (IGF) -

PERSONNEL WHO LOG ONTO THIS ACCOUNT WILL HAVE ACCESS TO THE DECNET FILES ASSOCIATED WITH THIS SUB-FACILITY, THAT IS DIRECTORIES <MMF-PCS> AND <PCS-MMF>.

PCS WILL RESIDE ON THE DECSYSTEM 20S. THEREFORE, THIS ACCOUNT SHOULD BE THE ONLY AVENUE OF ACCESS FOR PCS USERS TO THE MMF DATA BASES. PCS USERS WILL BE COMPETING FOR THE SAME RESOURCES; THEREFORE, PCS WILL HAVE TO WORK UNDER THE SAME CONSTRAINTS ESTABLISHED IN THIS DOCUMENT.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
PRODUCTION TABLE MAINTENANCE	SPACECRAFT PARAMETERS MAINTENANCE	RWRSUP,RWRSEX

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6.3.4 CSF ACCOUNT -

PERSONNEL WHO LOG ONTO THIS ACCOUNT WILL HAVE ACCESS TO THE DECNET FILES ASSOCIATED WITH THIS FACILITY, THAT IS DIRECTORIES <MMF-CSF> AND <CSF-MMF>.

THE FOLLOWING SCENARIOS, TRANSACTIONS, AND PROCESSES ORIGINATE FROM THIS ACCOUNT:

SCENARIO	TRANSACTION	PROCESS
USER REQUEST FOR COVERAGE	MMF-M MISSION PLANNING	FCCRGN,FCCRFM, DECNET
	MMF-M FLIGHT SEGMENT SCHEDULING	FCCRGN,FCCRFM, DECNET
	MMF-M ACQUISITION ACCOUNTING	DECNET,FAFXFR, FACRFS,FACRFB RSPACO,RSUOCO
	MMF-T MISSION PLANNING	FCCRGN
	MMF-T FLIGHT SEGMENT SCHEDULING	FCCRGN
	MMF-T ACQUISITION ACCOUNTING	FACRFB,RSPACO RSUOCO
PROCESSING REPORTS (FLIGHT)	CANDIDATES FOR ACQUISITION	RFCAAO
	CANDIDATE REQUEST RESOLUTION	RFCARI,RFCARR
	CYCLE REPORT	RFCYIN,RFCYRT
	MAPS	RFMAPI,RFMAPS
	CLOUD COVER ASSESSMENT	RECCAS
	PATH/ROW, LATITUDE/LONGITUDE XREFERENCE.	RFPRLL

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6.4 SOFTWARE TESTING/DEVELOPMENT ACCOUNTS

SUPPORT OF THE CONTINUING EFFORT INVOLVED IN DEVELOPING NEW SOFTWARE, REWORKING OLD SOFTWARE, AND TESTING THIS SOFTWARE BEFORE IT GOES INTO PRODUCTION WILL BE MAINTAINED. DEVELOPMENT AND TESTING CANNOT INTERFERE WITH DAY TO DAY PRODUCTION AND ITS IMPACT ON THROUGHPUT MUST BE MINIMIZED.

A FEATURE AVAILABLE UNDER DBMS-20 WHICH WILL PROVE USEFUL IS THE TMP OR AID FILES. WHEN AN AREA IS DECLARED TEMPORARY, IT MEANS THAT ANY CHANGES DURING EXECUTION OF A RUN UNIT ARE WRITTEN TO THE TMP FILE INSTEAD OF THE DBS FILE. IN OTHER WORDS, THE CHANGES ARE TEMPORARY BECAUSE THEY ARE DELETED AT THE END OF YOUR EXECUTION. WHEN A RUN UNIT MAKES ITS FIRST CHANGE OF THE AREA, THIS TMP FILE IS CREATED IN THE DIRECTORY WHERE THE DBS FILE RESIDES. THE TMP FILE WILL CONTAIN A COPY OF EACH PAGE THAT THE RUN UNIT MODIFIES. NO CHANGES WILL BE WRITTEN TO THE DBS FILE.

THE AID FILE IS SIMILIAR TO THE TMP FILE EXCEPT AID FILES ARE NOT DELETED WHEN YOUR RUN UNIT TERMINATES. THE AID FILE IS RETAINED UNTIL THE MERGE AID OR NOAID COMMAND FROM DBMEND IS EXECUTED. THE PAGES WILL EITHER BE MERGED INTO THE DATA BASE OR DELETED FROM THE SYSTEM. TEMPORARY CHANGES TO DATA BASE AREAS MAY BE RETAINED FOR LATER EXECUTIONS OF OTHER RUN UNITS.

USERS WILL HAVE NORMAL TIME SHARING ACCOUNTS IN WHICH SOFTWARE CAN BE WRITTEN AND TESTED. THE CHECKOUT PROCEDURES WHICH HAVE EVOLVED DURING THE DEVELOPMENT PHASE OF THIS PROJECT WILL BE USED. PRODUCTION SOFTWARE WILL BE RESIDENT IN A LEVEL 1 ACCOUNT WHICH IS UNDER CONFIGURATION MANAGEMENT.

6.5 SYSTEM ACCOUNTS

SYSTEM ACCOUNTS WOULD FALL OUTSIDE OF MAINSTREAM PRODUCTION, BUT THE ACTIVITIES ASSOCIATED WITH THESE ACCOUNTS WOULD BE A CRITICAL PART OF PRODUCTION SUPPORT. MANY ROUTINE TASKS WOULD BE PERFORMED FROM THESE ACCOUNTS AS PART OF THE DAY TO DAY EFFORT IN RUNNING A SMOOTH PRODUCTION SYSTEM.

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6.5.1 COMPUTER OPERATOR'S ACCOUNT -

OPERATOR PRIVILEGES WOULD BE ASSOCIATED WITH THIS ACCOUNT. THE OPERATOR WOULD ALSO BE RESPONSIBLE FOR REGULAR CHANGES TO THE VARIOUS SYSTEM AND ACCOUNT PASSWORDS AND WOULD BE RESPONSIBLE FOR ROUTINE OPERATOR TASKS SUCH AS TAPE MOUNTS, DISK MOUNTS, MONITORING OF HARDWARE, DAILY SAVES, FILE RESTORES, MAINTAINING THE HARDWARE, BOOTING OF SYSTEM, ETC.

THE OPERATOR WILL BE RESPONSIBLE FOR THE TWO SPECIAL FUNCTIONS AS DEFINED BELOW.

6.5.1.1 LINE TEST -

LINE TEST OR A TEST FOR OPERATIONAL READINESS IS ALSO ESTABLISHED. THIS WOULD BE A PRELIMINARY PROCEDURE TO DETERMINE IF ALL SYSTEMS WHICH ARE NECCESSARY FOR PRODUCTION ARE READY AND WHAT ACTIVITIES COULD PROCEED, DEPENDING ON WHAT PARTS OF THE SYSTEM ARE AVAILABLE. THIS TEST WOULD BE PERFORMED AT THE BEGINNING OF THE FIRST SHIFT.

6.5.1.2 SWITCHABLE DISK PACK -

THE SWITCHABLE DISK PACK IS ASSIGNED THE UNIQUE DEVICE NAME SWITCH: WHICH WILL NOT BE USED FOR ANY OTHER DEVICE ON EITHER THE DECSYSTEM 2050 OR DECSYSTEM 2060.

6.5.2 SYSTEM PROGRAMMER'S ACCOUNT -

THIS ACCOUNT WILL BE STRUCTURED TO SUPPORT THE SYSTEM PROGRAMMER. IT WILL BE ONE OF TWO ACCOUNTS WITH OPERATOR PRIVILEGES, THE OTHER BEING THE OPERATOR'S ACCOUNT.

THE ACCOUNT WILL BE DESIGNED TO SUPPORT INCOMING VENDOR SOFTWARE, PROVIDING A PRELIMINARY TESTBED FOR SUCH SOFTWARE. THE SYSTEM PROGRAMMER WILL ALSO BE MAINTAINING ANY SPECIAL USAGE PROGRAMS WHICH ARE ASSOCIATED WITH ACCOUNT OR DISK USAGE.

IT WOULD ALSO SERVE AS A POINT AT WHICH THE PRODUCTION SYSTEM COULD BE MONITORED AND SYSTEM TUNING ACTIVITIES COULD BE PERFORMED. THIS WOULD INCLUDE CONSTRUCTING THE JOB QUEUE AND ESTABLISHING SYSGEN PARAMETERS.

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7.0 SECURITY

WITHIN THE FRAMEWORK OF THESE OPERATIONAL ACCOUNTS, PASSWORD SECURITY WILL BE ESTABLISHED. THESE PASSWORDS SHOULD BE CHANGED AT REGULAR INTERVALS. THE OPERATOR WOULD HAVE THE RESPONSIBILITY FOR PASSWORD CHANGES AND FOR THEIR DISTRIBUTION TO THE APPROPRIATE PERSONNEL.

USERS WOULD ONLY HAVE KNOWLEDGE OF THE PASSWORDS FOR THEIR OWN ACCOUNTS. THIS WOULD ENHANCE THE OVERALL SECURITY OF THE DATA BASE.

THE PHYSICAL SECURITY OF THE HARDWARE MUST ALSO BE MAINTAINED, ESPECIALLY THE OPERATORS CONSOLE. THIS CONSOLE SHOULD BE INACCESSIBLE TO EVERYONE BUT THE OPERATOR. IF THIS SITUATION IS NOT CONTROLLED, THE ENTIRE SECURITY SCHEME EVOLVED IN THIS DOCUMENT WILL FAIL.

SINCE CERTAIN PROCESSES ARE ASSOCIATED WITH CERTAIN ACCOUNTS, ANOTHER LEVEL OF SECURITY IS MAINTAINED WITHIN THE FRAMEWORK OF THE ACCOUNT(S) ACCESSIBLE TO A GIVEN USER.

8.0 TYPICAL USER PROCESS OPERATIONS

8.1 MENUS - SYSTEM OPERATOR LEVEL

The main menu for the MMF Operations Control Program was shown in Section 2, and is repeated here as Figure 8.1-1 for convenience.

Under normal operating conditions, this menu is available only to the system operator and operations supervisors, who can select and execute any process by making the appropriate menu selections. As an illustration, if the operator needs to perform a control point library function, he enters selection #2 (MMF Transactions) in the main menu. This selection will bring up the MMF Transactions main menu screen, shown in Figure 8.1-2.

By entering selection #2 (Operational Activities), the MMF Operational Activities menu is brought to the screen, as shown in Figure 8.1-3.

The operator can now select #6 (Control Point Library Maintenance) which displays the system functions related to Control Point Library for further selection and execution. At this execution level, the menu selection will automatically perform the selected "TAKE process" execution function or sequence of functions, described in the main body of the Ground Segment Operations Plan.

To perform other system functions, the operator will enter the appropriate selection in the main menu and continue to branch through pre-programmed levels of menus until the desired execution point is reached. Quite clearly, a considerable degree of familiarity and experience with the menu sequences is

```
MMFOCP =========== MMF OPERATIONS CONTROL PROGRAM (MAIN MENU) ========== MMFOCP

SELECT OPTION ==> _

0 = EXIT
1 = HELP
2 = MMF TRANSACTIONS
3 = MANAGEMENT REPORTS
4 = DATA BASE EXAMINE, UPDATE AND RECOVERY
5 = UTILITIES AND SYSTEM STATUS
6 = TOPS-20 COMMAND MODE
7 = OPERATOR UTILITIES
```

Figure-8.1-1.

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```
MMFOCP ================== MMF TRANSACTIONS (MAIN MENU) ================ MMFOCP

                    SELECT OPTION ==> _

                    0 = EXIT

                    1 = HELP

                    2 = OPERATIONAL ACTIVITIES

                    3 = DATA BASE ADMINISTRATION

                    4 = PDR REPORT/MAINTENANCE

                    5 = ESR REPORT/MAINTENANCE

                    6 = INVENTORY REPORT/MAINTENANCE

                    7 = PRODUCTION TABLE MAINTENANCE
```


Figure 8.1-2.

```
MMFOCP ====================== MMF OPERATIONAL ACTIVITIES =============== MMFOCP

                 SELECT OPTION ==> _

                 0 = EXIT

                 1 = HELP

                 2 = USER REQUEST FOR COVERAGE

                 3 = USER REQUEST FOR PRODUCT

                 4 = ARCHIVE GENERATION SUPPORT

                 5 = OA/PEPG PRODUCT GENERATION

                 6 = CONTROL POINT LIBRARY MAINTENANCE

                 7 = REWORK AND WORK AROUNDS

                 8 = PRODUCT ASSESSMENT AND VALIDATION
```

Figure 8.1-3.

required, especially for the system operator who has the entire scope of system functions available. For functional operating personnel with more limited task assignments, the requirements are much narrower, since their specific functional log-on accounts will display menu screens that are much farther down in the menu hierarchy and, consequently, will more specifically define and limit their process selections.

8.2 MENUS - FUNCTIONAL OPERATING LEVEL

At the functional operating level, entry points into the scenarios given in paragraph 6.0 are determined by the operator's log-on account, and the appropriate menu is displayed as his starting point.

Two functional sequences are presented in the following paragraphs to illustrate typical menu scenarios. In both cases the operator will be a Production Controller, referred to as a PC.

8.2.1 Candidate Request Generation

1. The PC logs on to a terminal. His account identification brings up the MMF Operational Activities menu (Figure 8.2-1). Note that this entry point is two levels down from the system operator's main menu.
2. The PC enters selection #2, as shown in Figure 8.2-2.
3. The screen immediately displays the User Request for Coverage menu, Figure 8.2-3.
4. The PC enters selection #3, as shown in Figure 8.2-4.
5. The screen immediately displays the MMF Mission Planning and Scheduling menu, Figure 8.2-5.
6. The PC enters selection #2, as shown in Figure 8.2-6, and the process FCCRGN is automatically executed.

8.2.2 Product Assessment Entry

1. The PC logs on to a terminal. His account identification brings up the MMF Operational Activities menu, Figure 8.2-7. (Coincidental only to paragraph 8.2.1. It could be any of several other menus.)
2. The PC enters selection #4, as shown in Figure 8.2-8.
3. The screen immediately displays the Archive Generation Support menu, Figure 8.2-9.
4. The PC enters selection #4, as shown in Figure 8.2-10.
5. The screen immediately displays the Archive Generation Scheduling/Notification menu, Figure 8.2-11.
6. The PC enters selection #3, as shown in Figure 8.2-12.

```
MMFOCP ======================== MMF OPERATIONAL ACTIVITIES ================ MMFOCP

                SELECT OPTION ==> _

                0 = EXIT
                1 = HELP
                2 = USER REQUEST FOR COVERAGE
                3 = USER REQUEST FOR PRODUCT
                4 = ARCHIVE GENERATION SUPPORT
                5 = OA/PEPG PRODUCT GENERATION
                6 = CONTROL POINT LIBRARY MAINTENANCE
                7 = REWORK AND WORK AROUNDS
                8 = PRODUCT ASSESSMENT AND VALIDATION
```

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Figure 8.2-1.

```
MMFOCP ====================== MMF OPERATIONAL ACTIVITIES ============== MMFOCP

          SELECT OPTION ==> 2

          0 = EXIT
          1 = HELP
          2 = USER REQUEST FOR COVERAGE
          3 = USER REQUEST FOR PRODUCT
          4 = ARCHIVE GENERATION SUPPORT
          5 = QA/PEPG PRODUCT GENERATION
          6 = CONTROL POINT LIBRARY MAINTENANCE
          7 = REWORK AND WORK AROUNDS
          8 = PRODUCT ASSESSMENT AND VALIDATION
```

Figure 8.2-2

```
MMFOCP ==================== USER REQUEST FOR COVERAGE ================== MMFOCP

                    SELECT OPTION ==> _

                    0 = EXIT
                    1 = HELP
                    2 = USER AND ORDER ENTRY/UPDATE
                    3 = MMF MISSION PLANNING SCHEDULING
                    4 = MMF ACQUISITION ACCOUNTING
                    5 = PRODUCT/ACQUISITION AND USER ORDER CLOSEOUT
```


Figure 8.2-3.

```
MMFOCP ==================== USER REQUEST FOR COVERAGE =================== MMFOCP

                    SELECT OPTION ==> 3

                    0 = EXIT
                    1 = HELP
                    2 = USER AND ORDER ENTRY/UPDATE
                    3 = MMF MISSION PLANNING SCHEDULING
                    4 = MMF ACQUISITION ACCOUNTING
                    5 = PRODUCT/ACQUISITION AND USER ORDER CLOSEOUT
```

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Figure 8.2-4.

```
MMFOCP ============= MMF MISSION PLANNING AND SCHEDULING ============== MMFOCP


                SELECT OPTION ==> _

                0 = EXIT
                1 = HELP
                2 = CANDIDATE REQUEST GENERATION                    (FCCRGN)
                3 = CANDIDATE REQUEST FILE MERGER                   (FCCRFM)
```

Figure 8.2-5.

```
MMFOCP ============= MMF MISSION PLANNING AND SCHEDULING ============== MMFOCP

                SELECT OPTION ==> 2

                0 = EXIT

                1 = HELP

                2 = CANDIDATE REQUEST GENERATION                 (FCCRGN)

                3 = CANDIDATE REQUEST FILE MERGER                (FCCRFM)
```

Figure 8.2-6.

```
MMFOCP ====================== MMF OPERATIONAL ACTIVITIES =============== MMFOCP

          SELECT OPTION ==> _

          0 - EXIT

          1 - HELP

          2 - USER REQUEST FOR COVERAGE

          3 - USER REQUEST FOR PRODUCT

          4 - ARCHIVE GENERATION SUPPORT

          5 - OA/PEPG PRODUCT GENERATION

          6 - CONTROL POINT LIBRARY MAINTENANCE

          7 - REWORK AND WORK AROUNDS

          8 - PRODUCT ASSESSMENT AND VALIDATION
```


Figure 8.2-7.

```
MMFOCP ---------------------- MMF OPERATIONAL ACTIVITIES -------------- MMFOCP

                    SELECT OPTION ==> 4

                    0 - EXIT
                    1 - HELP
                    2 - USER REQUEST FOR COVERAGE
                    3 - USER REQUEST FOR PRODUCT
                    4 - ARCHIVE GENERATION SUPPORT
                    5 - OA/PEPG PRODUCT GENERATION
                    6 - CONTROL POINT LIBRARY MAINTENANCE
                    7 - REWORK AND WORK AROUNDS
                    8 - PRODUCT ASSESSMENT AND VALIDATION
```

Figure 8.2-8.

```
MMFOCP ================== ARCHIVE GENERATION SUPPORT ================== MMFOCP

                SELECT OPTION ==> _

                0 = EXIT

                1 = HELP

                2 = PCS PROCESSING

                3 = GSTDN DATA RECEIPT                    (GHXTRE)

                4 = ARCHIVE GENERATION SCHEDULING OR NOTIFICATION

                5 = HDT-AM GHIT GENERATION                (GGGHAM)

                6 = ARCHIVE DISSEMINATION SCHEDULING OR NOTIFICATION

                7 = EDC DATA RECEIPT                      (GTLGOT)
```

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Figure 8.2-9.

```
MMFOCP ==================== ARCHIVE GENERATION SUPPORT ==================== MMFOCP

SELECT OPTION ==> 4

0 = EXIT
1 = HELP
2 = PCS PROCESSING
3 = GSTDN DATA RECEIPT                    (GHXTRE)
4 = ARCHIVE GENERATION SCHEDULING OR NOTIFICATION
5 = HDT-AM GHIT GENERATION                (GGGHAM)
6 = ARCHIVE DISSEMINATION SCHEDULING OR NOTIFICATION
7 = EDC DATA RECEIPT                      (GTLGOT)
```


Figure 8.2-10.

```
MMFOCP =========== ARCHIVE GENERATION SCHEDULING/NOTIFICATION ========== MMFOCP

                  SELECT OPTION ==> _

                  0 = EXIT

                  1 = HELP

                  2 = ARCHIVE GENERATION SCHEDULING

                  3 = ARCHIVE GENERATION NOTIFICATION
```


Figure 8.2-11.

```
MMFOCP =========== ARCHIVE GENERATION SCHEDULING/NOTIFICATION ========== MMFOCP

                    SELECT OPTION ==> 3

                    0 = EXIT
                    1 = HELP
                    2 = ARCHIVE GENERATION SCHEDULING
                    3 = ARCHIVE GENERATION NOTIFICATION
```

Figure 8.2-12.

7. The screen immediately displays the Archive Generation Notification menu, Figure 8.2-13.

8. The PC enters selection #3, Figure 8.2-14, and the process GQHASS is automatically executed.

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```
MMFOCP ================ ARCHIVE GENERATION NOTIFICATION ================ MMFOCP

                   SELECT OPTION ==> _

                   0 - EXIT
                   1 - HELP
                   2 - INPUT FILE TRANSFER FROM IGF                (GXIREC)
                   3 - PRODUCT ASSESSMENT ENTRY                    (GOHASS)
                   4 - R TO A FEEDBACK VERIFICATION                (GPIAFV)
                   5 - R TO A FEEDBACK DATA BASE APPLICATION       (GPIAFA)
                   6 - ARCHIVE ITEM CLOSE OUT                      (GPARCO)
                   7 - TOTAL RUNSTREAM(GXIREC,GOHASS,GPIAFV,GPIAFA,GPARCO)
```

Figure 8.2-13.

```
MMFOCP ---------------- ARCHIVE GENERATION NOTIFICATION ---------------- MMFOCP

                        SELECT OPTION ==> 3

                        0 - EXIT

                        1 - HELP

                        2 - INPUT FILE TRANSFER FROM IGF                (GXIREC)

                        3 - PRODUCT ASSESSMENT ENTRY                    (GOHASS)

                        4 - R TO A FEEDBACK VERIFICATION                (GPIAFV)

                        5 - R TO A FEEDBACK DATA BASE APPLICATION       (CPIAFA)

                        6 - ARCHIVE ITEM CLOSE OUT                      (GPARCO)

                        7 - TOTAL RUNSTREAM(GXIREC,GOHASS,GPIAFV,GPIAFA,GPARCO)
```

Figure 8.2-14.

8.3 OTHER PROCESSES

In following the foregoing menu scenarios, it should be noted that:

a. Different initial menus may be displayed, depending on the log-on account identification.

b. At any menu screen, entry of any available selection will branch to the next appropriate menu leading to the desired process.

c. At the process execution level menu, the operator is flagged that a process or process stream is about to be executed.

d. Exiting (select option Ø0) from a menu will return the screen back to the preceding menu. Exiting from the initial menu will automatically execute a log-off from the terminal.

e. If the operator is confused, inexperienced, or has just forgotten the required sequence, selection of Ø1 (HELP) will display explanatory information to assist the operator.

Further menu illustrations are not given here due to the large number of menus and possible branches made available by the program. A complete listing of all the menus is available in program MMFMLM.DSK on the DEC 2050 system.